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ENGINEERING FINANCE COMMERCE

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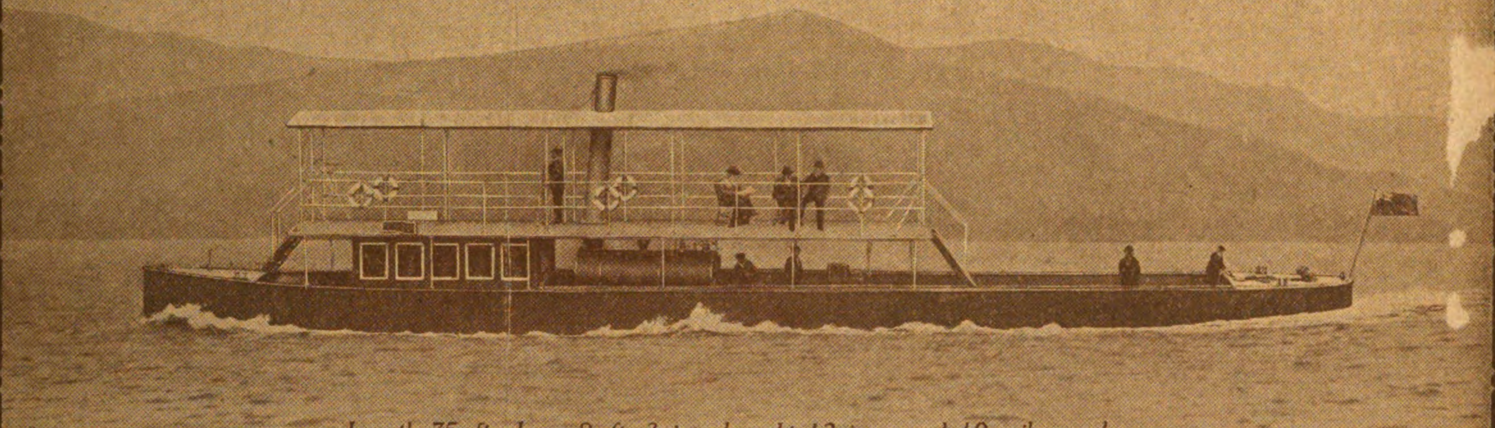

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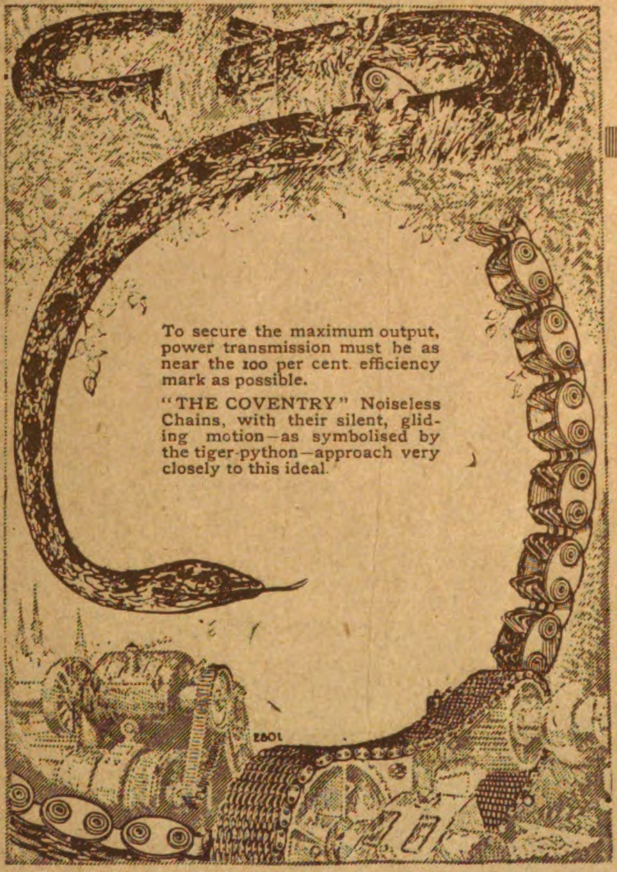

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THE PHILIPPINES

Historical.

Early Philippine history fades away into the history of Chinese foreign adventure and commerce, trading having been carried on between the two countries for a thousand years prior to the Spanish conquest.

Magallanes discovered the Philippines in 1521, about 100 years before the Pilgrim Fathers landed at Plymouth Rock. Spaniards settled Cebu, 1568. Legaspi occupied Manila, 1570. British captured Manila, 1762.

United States occupied Manila August 13, 1898. Treaty of Paris signed December 10, 1898. Filipino insurrection began February 4, 1899. First provincial government organized (Pampanga), February 6, 1901. First American Civil Governor, William H. Taft, July 1, 1901. Philippine Act passed July 1, 1902. Jones Act passed August 29, 1916.

Geography.

The Philippine Archipelago extends from the Batanes Islands in the north to the Tawitawi group at the southern end of the Sulu islands, a distance of 1,152 miles. The archipelago is composed of 3,141 islands, of which 400 are inhabited.

Area of Archipelago.

	Square miles.
Total area, land and water	832,968
Land	127,825
Water	705,115

Comparative Areas.

	Square miles.
Philippines	127,853
British Isles	120,973
New York, New Jersey, Pennsylvania, and Delaware	104,970
Japan	147,649

Luzon islands is as large as Denmark, Belgium, and Holland combined. Mindanao is about equal in area to Portugal.

Distribution of Area.

	Square miles.
Forest land	72,000
Commercial forest	61,000
Cultivated	14,000
Grass lands	20,000
Unexplored	14,000

Forest lands contain some 747 native tree species; 50 to the acre in some parts. Mindanao has 423 varieties. Over 200 varieties come to the Manila market. One-half of the forest land is virgin.

Cultivated Land.

	Acres.
Rice	3,000,000
Hemp	1,236,000
Coconuts	680,000
Corn	1,070,000
Tobacco	145,000
Sugar	445,000
Maguey	76,000
Cacao	2,600
Coffee	2,000

Comparative Cultivation.

Japan and the Philippines: Japan with 14,000,000 acres of arable land produces crops to the value of Ps.2,000,000,000. Philippines with 7,000,000 acres produces only Ps. 200,000,000.

Population.

Total from latest (1917-18) Philippine Health Service records: 9,500,000.

Christians	8,730,000
Mohammedans	275,000
Non-Christians and Pagans	595,000

Japanese	42,800,000

Progress of Population.

1735	837,182
1805	1,741,234
1826	2,593,287
1840	3,096,031
1862	4,734,533
1887	5,984,727
1896	6,261,339
1917-18	9,500,000

Climate.

Average temperature for 30 years: 80° Fahrenheit.

Dry temperate months: November, December, January, and February.

Intermediate months: March, July, August, September, October.

Hot months: May and June.

Rainfall.

Maximum days of rain in July, August, September.

Minimum days of rain in February and March.

Dry season: November to May, inclusive.

Wet season: June to October, inclusive.

Typhoons: Frequent in July, August, September, and October.

Mountains.

	Feet
Apo	10,312
Pulog	9,450
Mayon	8,970
Halcon	8,865
Malindang	8,197
Canlaon	8,192
Ste. Tomas	7,418
Data	7,364
Banajao	7,382
Pagsan	7,339
Isarog	6,450
Pinalobo	6,137
Cristobál	5,288
Bulusan	5,100
Maquiling	4,783
Arayat	3,564
Talim	1,519
Taal	1,050

There are 50 volcanoes in the archipelago, of which 20 are active and 30 are extinct.

The principal active volcanoes are Taal, Canloan, and Apo.

The principal extinct volcanoes are Talim, Maquiling, Cristobal, Banajao, and Isarog.

Rivers.

	Miles
Grande de Pampanga	220
Pulangi, Mindanao	300

Other rivers of importance are the Agno Grande, Grande de Pampanga, Agusan, and Pasig.

Mindoro has 60 rivers and Samar 26, none of them of commercial value.

Real Estate Values.

[1 peso=$0.50].

Manila	Ps.104,024,000
Provinces	392,180,000

Mortality (Americans and Europeans) per 1,000 (1917-18).

Manila	8.0
New York	16.5
San Francisco	15.0
Chicago	14.0
Glasgow	18.0
Belfast	22.0

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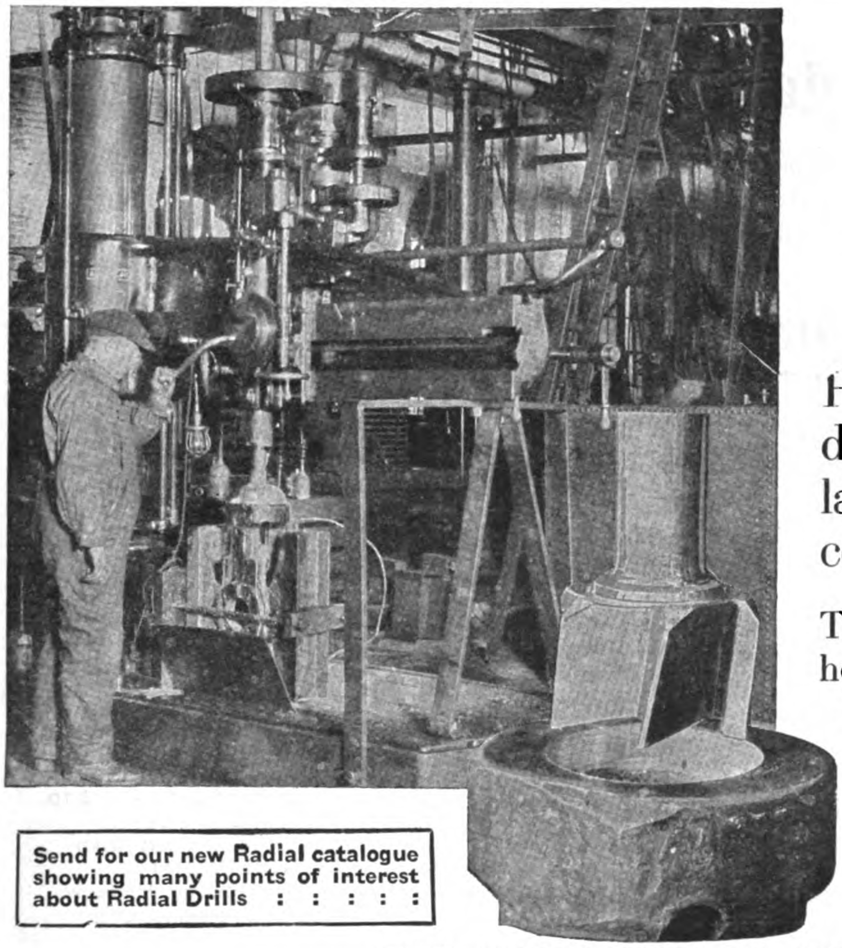

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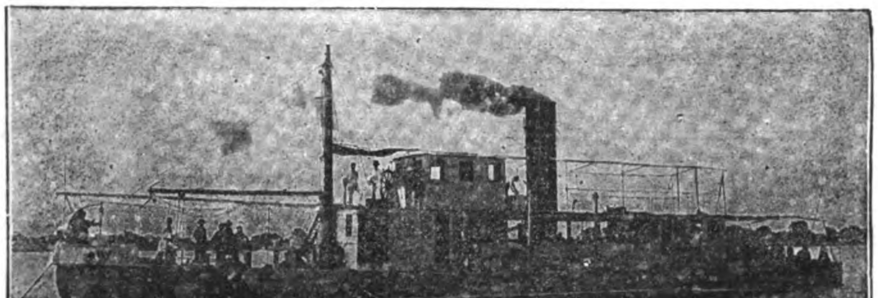

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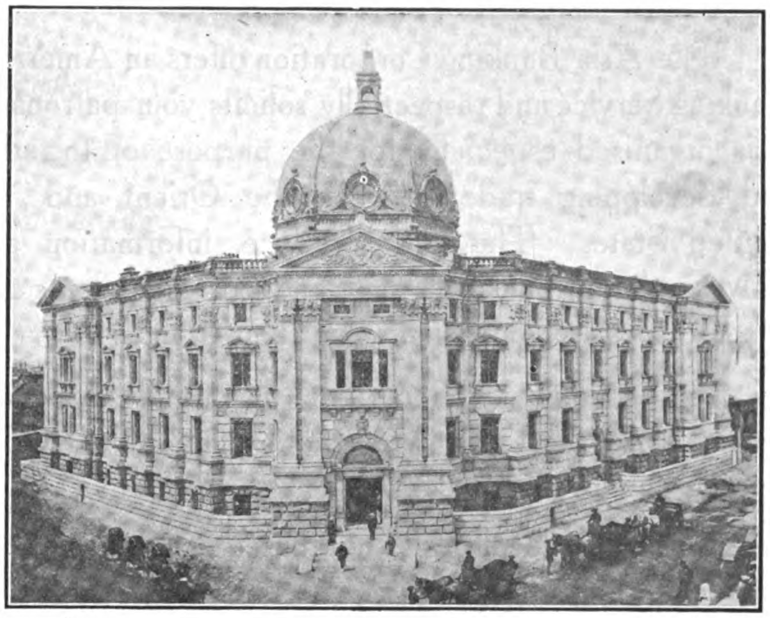

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NEW YORK. 68, William Street.

BARCELONA. Plaza de Cataluna 6.

Collections made. Bills of Exchange purchased.
Drafts sold. Trade Enquiries effected.

533 BRANCHES IN CANADA & NEWFOUNDLAND, ALSO

67 FOREIGN BRANCHES.

CUBA—Havana (5 Branches), Antilla, Banes, Bayamo, Caibarien, Camaguey, Camajuani, Cardenas, Ciego de Avila, Cienfuegos, Cueto, Florida, Guantanamo, Jatibonico, La Maya, Manzanillo, Matanzas, Moron, Nuevitas, Palma Soriano, Pinar del Rio, Puerto Padre, Sagua la Grande, Sancti Spiritus, Santa Clara and Santiago de Cuba.

PORTO RICO—San Juan, Mayaguez and Ponce. **COSTA RICA**—San José.

DOMINICAN REPUBLIC—S. Domingo, Puerto Plata, Sanchez, S. Pedro de Macoris and Santiago de los Caballeros. **MARTINIQUE**—Fort de France.

GUADELOUPE—Pointe-à-Pitre and Basse Terre.

VENEZUELA—Caracas, Ciudad Bolivar, Maracaibo and Puerto Cabello

BRITISH WEST INDIES.

Antigua—St. John's.	**Montserrat**—Plymouth.
Bahamas—Nassau.	**Nevis**—Charlestown.
Barbados—Bridgetown & Speightstown.	**St. Kitts**—Basseterre.
Dominica—Roseau.	**Tobago**—Scarborough.
Grenada—St. George's.	**Trinidad**—Port of Spain and San Fernando.
Jamaica—Kingston.	

BRITISH GUIANA—Georgetown, New Amsterdam and Rose Hall (Corentyne).

BRITISH HONDURAS—Belize.

Affiliated in France:

THE ROYAL BANK OF CANADA (FRANCE), 28, Rue du Quatre-Septembre, PARIS.

Correspondents in Canada and West Indies for the HONG KONG AND SHANGHAI BANKING CORPORATION.

Capital Paid up and Reserves - $33,000,000.

Total Resources - - - - - $470,000,000.

THE BANK OF EAST ASIA, LTD.

HEAD OFFICE: HONGKONG (2 Queen's Road Central).

Paid-up Capital - $2,000,000.00

DIRECTORS: 董事局

Pong Wai Ting, *Chairman.* 龐偉廷

Chow Shou Son	周壽臣	Mok Ching Kong	莫晴江
Kan Ying Po	簡英甫	Chan Ching Shek	陳澄石
Li Koon Chun	李冠春	Wong Yun Tong	黃潤棠
Chan Kai Ming	陳啓明	Fung Ping Shan	馮平山
Ng Chang Luk	吳增祿	P. K. Kwok	郭幼廷

Kan Tong Po, *Chief Manager.* 簡東浦

Li Tse Fong, *Asst. Manager.* 李子方

A Bank of Character, Strength, Efficiency & Service.

We offer every facility consistent with sound Banking.

Interest allowed on Current Account at 2 per cent. per annum, and on Fixed Deposits at the following rates:—

For 3 months @ 3% per annum
" 6 " 4% "
" 12 " 5% "

KAN TONG PO, *Chief Manager.*

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FAR EASTERN DIVISION, INC.,

Cable Address **SHANGHAI** **Gastonorge**

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AMERICAN HOIST & DERRICK CO. Builders Hoists, Elevators and Derricks, Railroad Ditchers and Railroad Construction Equipment.	BOWERS RUBBER WORKS. Belting, Packing, Steam Hose, Mill Hose, etc.
BRADFORD BELTING CO. Leather Belting.	H. BRINTON COMPANY Superior Knitting Machinery.
LANSTON MONOTYPE CORP. Type Composing, Type Casting and Lead, and Rule Casting Machine.	NORTH-WESTERN EXPANDED METAL CO. Expanded metal for reinforced concrete construction.
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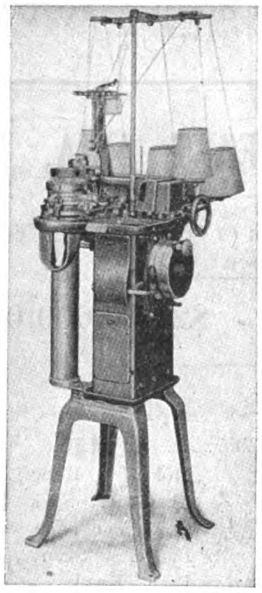
And a long list of other equally prominent manufacturers whose products are required in the Industrial Development of China.



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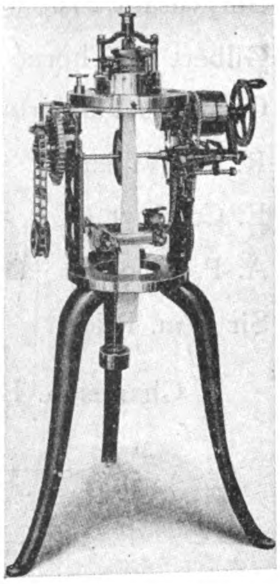
are invited to inspect our exhibit of

BRINTON AUTOMATIC SEAMLESS KNITTING MACHINES

SPECIAL FEATURES

Socks manufactured with our machinery have REAL RIBBED TOPS, EXCLUSIVE FRENCH WELT, TIGHT ANKLE, HIGH SPLICE, DOUBLE SOLE and PERFECT PLATING.

More production than any other machine making the same style of goods.



American needles and spares always carried in stock. Instructions given. Inquiries solicited.

GASTON, WILLIAMS & WIGMORE, ELECTRICAL ENGINEERING CORPORATION

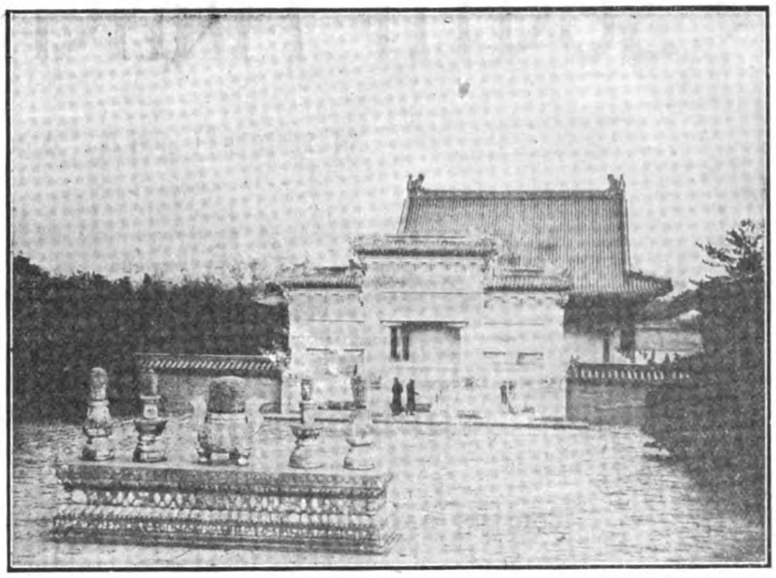
China Agents for

WESTINGHOUSE ELECTRIC EXPORT COMPANY

Complete Electrical and Steam Equipments for all purposes. "The name Westinghouse is a Guarantee."

CHINESE GOVERNMENT RAILWAYS

SUMMER RESORT AT CHI KUNG SHAN



TOMB OF EMPEROR YU CHENG NEAR LIANG KOW CHWANG

PEKING-HANKOW LINE

"The Road Through The Heart of China"

THE Peking-Hankow Line, the most important section of China's overland route, enables tourists and travellers to get a glimpse of Old China, the train passing through magnificent scenery, traversing the great plains of Chihli, the central portion of Honan and the mountainous regions of the eastern Hupeh province.

The Peking-Hankow route joins at Fengtai the main line of the Peking-Mukden Railway, by means of which this line is connected with the railways in Manchuria, Korea, Japan, and Siberia, while steamer facilities at Hankow bring it into easy communications with the Yangtze River ports and Shanghai.

From the Capital to Hankow the journey occupies 34 hours, by the daily through train which is provided with up-to-date sleeping and dining accommodations.

Chikungshan Mountain (Summer Resort).—Not many Summer Resorts in China inland, can bear comparison with the natural charming views, that reward those who ascend the mountain of Chikungshan, whose summit stands at an altitude of 1,980 ft. On reaching Sintien station, situated 110 miles from Hankow, a serpentine road climbs the mountain, on top of which are hundreds of beautiful bungalows awaiting vacationists. This popular resort is celebrated for its scenery, where an almost unbroken communion with nature can be enjoyed for a week at a time.

Hsi-ling or Western Imperial Tombs.—With their present-day accessibility, there is now little excuse for visitors to Peking omitting a trip to the Western Imperial Tombs, undoubtedly one of the most impressive sights in China. The site of these beautifully adorned Imperial Tombs is close to Liang Ko Chwang station, 79 miles from Peking, which is reached by a Branch-line, formerly built for the exclusive use of the Imperial Sovereigns when visiting the Tombs of their ancestors. The Western Tombs include the mausoleums of four Manchu Emperors and three Empresses, as well as those of a number of Princesses. The region, as a well laid-out park, closely wooded, is justly appreciated for the charming scenery surrounding the Imperial Tombs and is highly recommended to any one in search of the extraordinary and beautiful.

For Particulars, Pamphlets, Tickets, etc., apply to the "Information Bureau" at Peking Head Office or to Tourist Agencies.

SOUTH MANCHURIA RAILWAY

MANCHURIA AND CHOSEN LINES

Circular and Overland Trips at Greatly Reduced Rates

TOURIST TRAVEL OFF THE BEATEN TRACK

Tourists in the Far East should not miss Manchuria. Through Japan, Chosen (Korea), and Manchuria (or vice versâ) is an ideal trip, combining the distinctive characteristics of three unique and profoundly interesting countries.

The Chosen and Manchuria Lines are under the management of the South Manchuria Railway Company. Express trains have been temporarily suspended (except between Fusan and Seoul), but the Ordinary Trains are equal to most American Trains, run at least three times a day from each end, and to some of them Sleeping and Dining Cars are attached. Sleeping berths should be reserved in advance.

Hotels under the Company's management are established on foreign lines at SEOUL (capital of Chosen), FUSAN and SHINGISHU (the two extremities of Chosen), KONGOSAN (the famous Diamond Mountain of Korea, rivalling Switzerland in scenery), MUKDEN (ancient capital of China, home of the Manchuria Dynasty, noted for Imperial Palaces and Tombs), CHANGCHUN (junction for three railways, and "key to Manchuria"), PORT ARTHUR (of world-wide fame for its historic sieges and ruined forts), DAIREN (one of the greatest commercial cities in the Orient), and HOSHIGAURA (the finest seaside resort in North China).

From Dairen there are frequent and regular steamers to and from Shanghai, Tsingtao, Tientsin, etc.

For pictorial guide-books, pamphlets, and further particulars, apply to the Tourist and Ticket Agencies, or direct to the

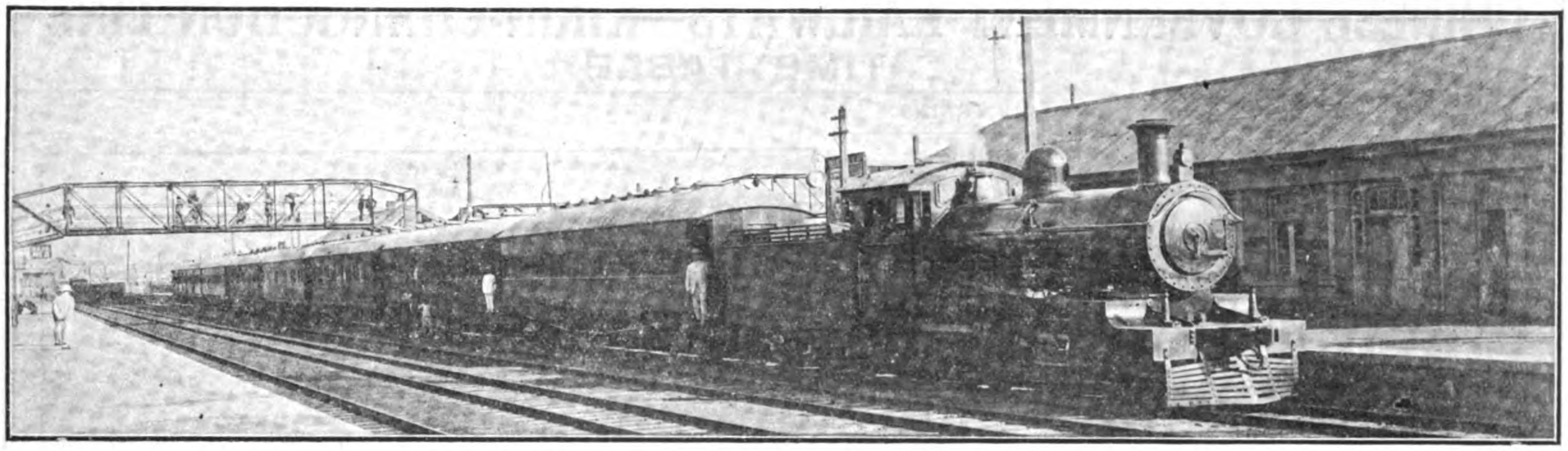
SOUTH MANCHURIA RAILWAY COMPANY

Head Office: DAIREN

Branch Offices: TOKYO, SEOUL, HARBIN, KIRIN, PEKING, AND SHANGHAI

Telegraphic Address: MANTETSU. Codes: A.B.C. 5th Edition, and Lieber's

CHINESE GOVERNMENT RAILWAYS



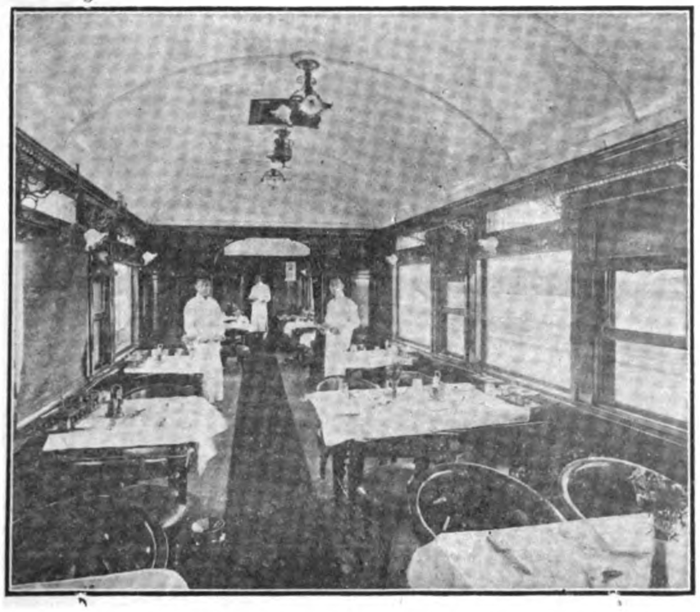
TRAIN DE LUXE AT TIENTSIN EAST STATION

The Peking-Mukden Line

Through service from Peking to Mukden, connecting at Mukden with the South Manchuria Express from Trans-Siberian Route. At Peking connection is made with the Peking-Hankow Railway for Hankow and Yangtze Ports, and Intermediate Points reached by the Chen-Tai Line to Taiyuanfu, the Tao-Ching Line, and the Pienlo Railway to Kaifengfu and Honanfu. Connection is also made at Peking with the picturesque Kalgan Line, "The road to the Great Wall." At Tientsin (Central) connection is also made with the Tientsin-Pukow line for Tsinanfu and Shanghai.

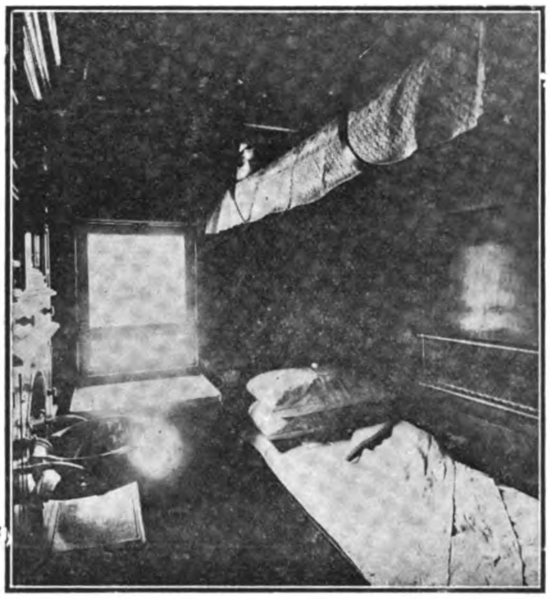
THE RAILWAYS OF NORTH CHINA PASS THROUGH THE MOST INTERESTING PART OF CHINA

PEKING.—The Capital, with the Walls, Palaces, Temples and Tombs.—**TIENTSIN.**—The Great Trade Centre of North China.—**TONGSHAN.**—The Largest Mining and Industrial Town in the Country.—**SHANHAIKWAN.**—Where the Great Wall ends at the sea.—**NEWCHWANG.**—The Busy Commercial Port of Manchuria.—**MUKDEN.**—The Ancestral home of the Manchu Dynasty. A Miniature Peking, with its Walls, Imperial Palaces, Temples and Tombs.



DINING CAR ON TRAIN DE LUXE

The through trains are equipped with Buffet and Dining Car Service. A Comfortable, Modern Train De Luxe of Compartment Sleeping Coaches is operated in connection with the through service of the Trans-Siberian and South Manchurian Railways.



FIRST CLASS SLEEPING BERTH, TRAIN DE LUXE

Through tickets to London and other places in Europe can be obtained at Peking and Tientsin from which stations passengers' luggage can be registered through to destination. Through tickets are issued and passengers' baggage registered through between the important Stations on the Peking-Mukden Railway and the South Manchuria Railway, Chosen (Korean) Railway and Imperial Government Railways of Japan.

For information regarding the many places of interest in China, Tourists will find "The Travellers' Handbook for China" with maps most useful. It is obtainable at any of the offices of Thos. Cook & Sons. The Chinese Government Railways Time Table book with Railway map can be had at any of the offices of Thos. Cook & Sons, and the International Sleeping Car Co., Hotels, Clubs and at all important Stations. Full particulars on application to any of the Stations or to the Traffic Manager of any of the Railways mentioned and on application to any office in America, Europe or the Far East of The Cie. International des Wagons-Lits, Thos. Cook & Sons, or

TRAFFIC MANAGER, CHINESE GOVERNMENT RAILWAYS (PEKING-MUKDEN), TIENTSIN.

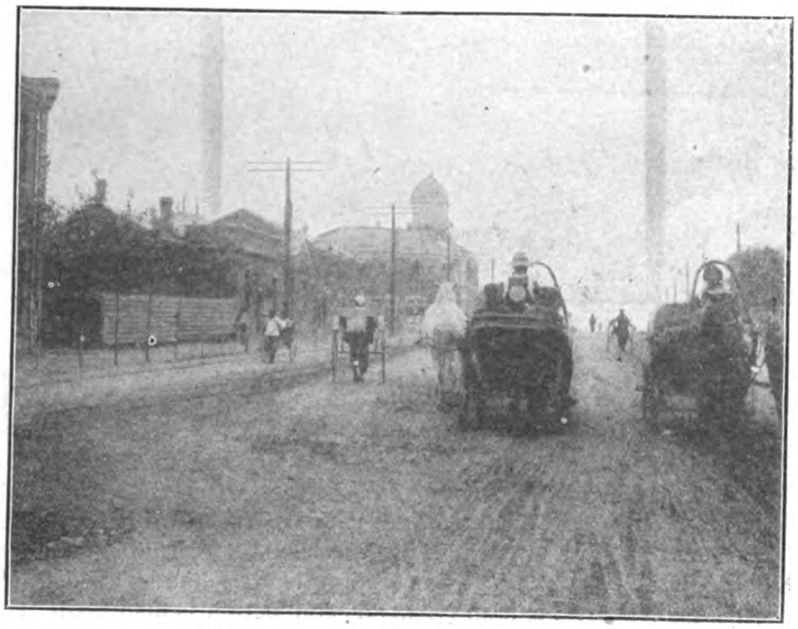
中華民國政府吉長鐵路行車時刻表

CHINESE GOVERNMENT RAILWAYS—KIRIN-CHANGCHUN LINE

TIME TABLE

DOWN TRAINS		STATIONS	UP TRAINS	
DAILY			DAILY	
MIXED	MAIL		MAIL	MIXED
P.M. 1.20	A.M. 8.30 d.	TOUTAOKOU	P.M. a. 6.00	A.M. 11.10
1.30 1.39	8.40 a. 8.42 d.	2.79 CHANGCHUN	d. 5.50 a. 5,45	11.00 10.56
2.14 2.19	9.12 a. 9.14 d.	12.69 KALUN	d. 5.15 a. 5.13	10.22 10.19
2.49 2.51	9.44 a. 9.45 d.	11.13 YINMAHO	d. 4.43 a. 4.42	9.46 9.40
3.07 3.09	9.58 a. 10.00 d.	5.38 HSIACHIUTAI	d. 4.29 a. 4.27	9.25 9.20
3.22 3.24	10.12 a. 10.13 d.	4.58 YINGCHENGTZE	d. 4.14 a. 4.13	9.07 9.05
3.51 3.55	10.35 a. 10.43 d.	9.14 TUMENLING	d. 3.53 a. 3.48	8.42 8.37
4.42 4.46	11.22 a. 11.24 d.	9.26 HUAPICHANG	d. 3.08 a. 3.06	7.51 7.47
5.07 5.08	11.37 a. 11.38 d.	6.46 KUTIENTZE	d. 2.52 a. 2.51	7.30 7.28
5.27 5.32	11.53 a. 11.55 d.	6.83 KIUCH N	d. 2.37 a. 2.35	7.11 7.07
5.58	12.15 a.	8.30 KIRIN	d. 2.15	6.45

NOTICE:—"d" = Departure. "a" = Arrival. 25th November, 1917

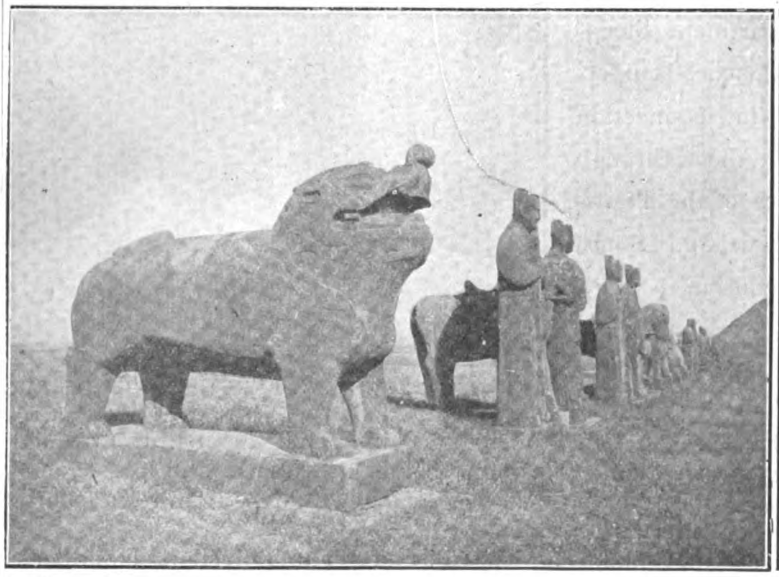


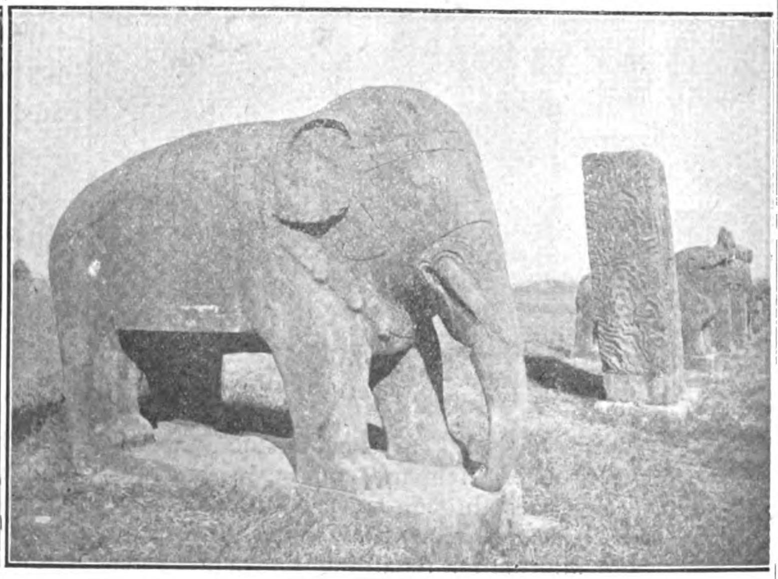
STREET SCENE, CHANGCHUN.

THE PIENLO RAILWAY

(Kaifeng-fu to Honanfu)

"THE FIRST SECTION OF THE PROJECTED CENTRAL TRUNKLINE"

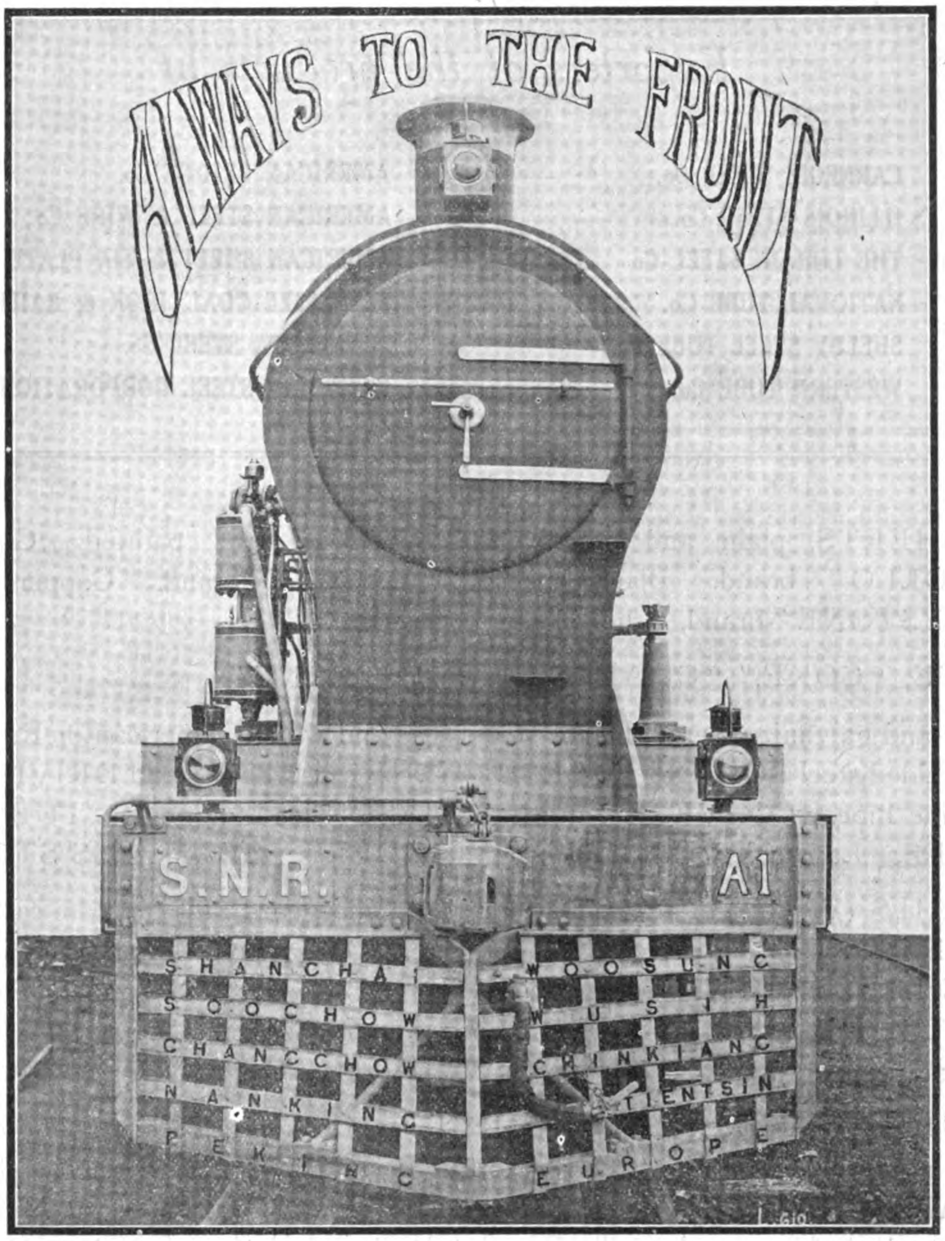




THE SUNG TOMBS NEAR KAIFENG-FU ON THE PIENLO RAILWAY.

The line connects with the through service of the Peking-Hankow Railway at Tcheng Tchéou, enabling the traveller to visit Kaifengfu, the provincial capital of Honan, and the old capital of the Empire at Honanfu.

CHINESE GOVERNMENT RAILWAYS
SHANGHAI-NANKING RAILWAY



ACCELERATED SERVICE BETWEEN SHANGHAI AND PEKING

Express and Fast Trains run daily between Shanghai North, Soochow, Wusih, Changchow, Tanyang, Chinkiang and Nanking, to which places weekend tickets, at reduced rates, are issued.

Through Bookings to Chinese Government and Japanese Lines

Reduced Rates for Picnic and other Parties

For further information apply to THE TRAFFIC MANAGER, SHANGHAI NORTH STATION,

TELEPHONE No. 900

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TENNESSEE COAL, IRON & RAILROAD Co.
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CANADIAN STEEL CORPORATION.

STEEL SHEETS, plain and corrugated; galvanized and painted. Galvanized sheets "APOLLO" brand. Black sheets "EAGLE" brand. Copper bearing sheets "KEYSTONE" brand, either black or galvanized.

TIN PLATE, "COKE," "CHARCOAL" and "TERNE."

PIPE, black and galvanized wrought, for steam, gas and water; American or English Standards. Lapwelded steel BOILER TUBES. CASING, TUBING and DRIVE PIPE. Oil and Gas line Pipe. CONVERSE and MATHESON lead joint pipe. TUBULAR STEEL POLES. Lapwelded and seamless CYLINDERS. SEAMLESS STEEL TUBING.

STEEL RAILS (Vignole) of all sections. Groove and guard rails for tramways. RAILS and ACCESSORIES. SPECIAL TRACK WORK, points and crossings. Manganese Steel Insert and Solid Manganese Steel for electric and steam railroads. Portable SWITCHES, switch stands, rail braces, compromise joints, etc. STEEL RAILWAY TIES (Sleepers).

STRUCTURAL MATERIAL of all kinds; Joists, Channels, Tees, Angles, etc., for Bridges, Buildings and General Constructive work. Best quality BESSEMER and BASIC OPEN HEARTH STEEL BARS, Rounds, Squares, Flats, Ovals and Hexagons. Special bolt, rivet and shafting steel. STEEL SHEET PILING, STEEL MINE TIMBERS, OIL WELL DERRICKS, SCHOEN SOLID FORGED AND ROLLED STEEL WHEELS. VANADIUM STEEL, GEAR BLANKS.

FORGED AXLES of highest quality for Locomotives, Railroad and Tramway Cars. FORGINGS.

HOOPS for barrels and casks, and TIES for baling.

We Solicit Inquiries accompanied by exact specifications stating quantity

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BATAVIA	CALCUTTA	JOHANNESBURG	NEW GLASGOW	SAO PAULO	VALPARAISO
BIRMINGHAM	CAPE TOWN	LIMA	PARIS	SOERABAYA	VANCOUVER
BOMBAY	GENOA	LONDON	PETROGRAD	SYDNEY	WINNIPEG

MILD STEEL PLATES for ships' tanks, stacks and boilers. Flange and fire-box steel. Checkered plates.

WIRES, baling and fencing; all classes of coated and uncoated for manufacturing purposes. Genuine "IOWA," "GLIDDEN" and "WAUKEGAN" barb wire. Fence and netting STAPLES. Tinned mattress, broom and bottling wire. Woven Wire Fence. FABRIC FOR REINFORCING CONCRETE. Wire Nails and Tacks of all descriptions

INDESTRUCTIBLE CYLINDRICAL STEEL FENCE POSTS.

HORSE and MULE SHOES. COLD ROLLED PLATES for deep stamping, etc

AERIAL TRAMWAYS. Bleichert System. Locked coil track cable, locked wire cable and smooth coil track cable for Aerial Tramways.

IRON and STEEL WIRE ROPE, bright and galvanized for all purposes. Bright and galvanized SASH CORD, galvanized CLOTHES LINES. Bare and insulated COPPER WIRE and CABLE of every description.

COPPER RAIL BONDS, solid and stranded for electric railways.

WEATHER PROOF INSULATED telephone and signal WIRE. Galvanized telegraph and telephone wire.

ROUND and FLAT WIRE STEEL SPRINGS. PIG IRON, COAL and COKE.

FABRICATED MATERIAL for railway bridges, highway bridges, turntables, transfer tables, barges, steel chimneys, steel buildings, mill buildings, office buildings, tanks, towers, transmission towers, trestles, cylinder piers.

desired, with full particulars as to size, weight, finish, packing, etc. Special catalogue on application.

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6,000 MILES

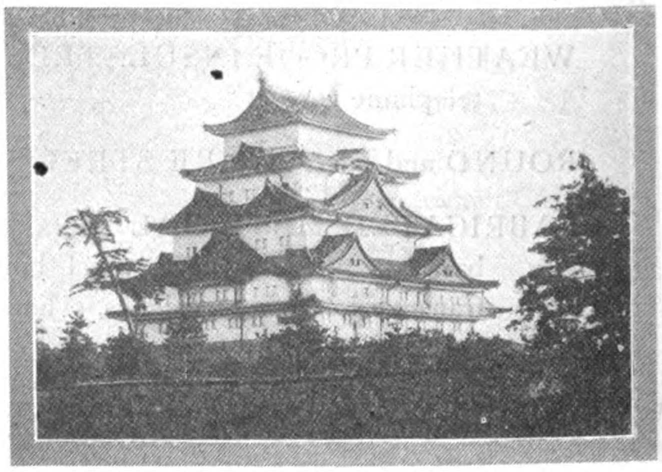
Thoroughly Equipped with all up-to-date Improvements, and reaching every nook and corner of the country.

Reserved Cars, Private Cars, Special Trains, on Previous Arrangement for Tourist Parties of all sizes

First-Class equipment and fast service is maintained on the fine express and through trains, which carry chair, sleeping and dining cars.

Frequent service is provided between all the principal cities of the Empire.

NIJUBASHI (TWIN BRIDGES), THE MAIN APPROACH TO THE IMPERIAL PALACE, TOKYO



NAGOYA CASTLE, BUILT IN 1611, NOTED FOR ITS COPPER-BRONZE ROOFS CROWNED BY GOLD DOLPHINS

IMPERIAL JAPANESE GOVERNMENT RAILWAYS

THROUGH BOOKING TO AND FROM

CHINA

Single and Return Tickets between China and Japan via Chosen

Period of Validity : Single, 40 days : Return, 110 days. 20% Reduction for Return Tickets

China-Japan Party Trip Tickets

Period of Validity : Two months. Reduction : 25%-50% for 10 or more passengers

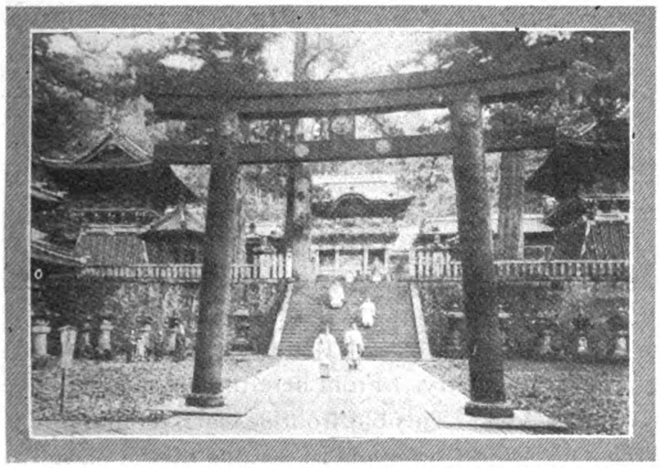
China-Japan Circular Tour Tickets

Period of Validity : Four months. Reduction : 30% for Railway ; 25% for Steamer

China-Japan Parcel Through Traffic

Parcel through conveyance between the principal stations in China and Japan viâ Chosen at low rates

FOR PARTICULARS, TIME-TABLES, MAPS, ETC., PLEASE APPLY TO
TRAFFIC DEPARTMENT, IMPERIAL GOVERNMENT RAILWAYS,
TOKYO



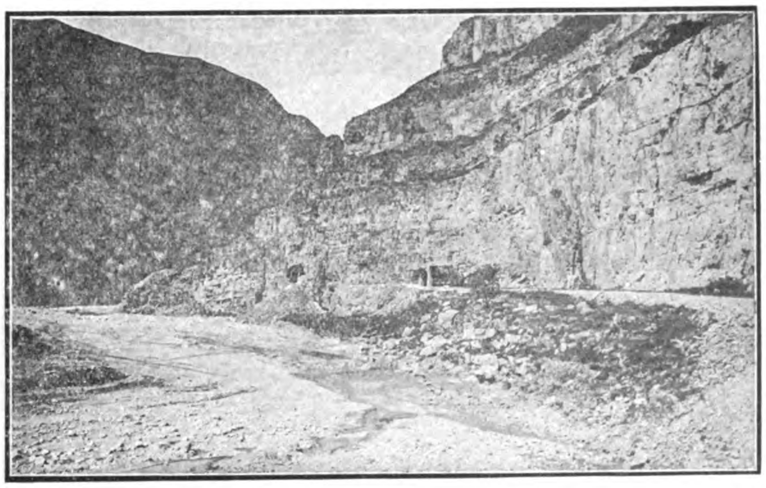
NIKKO SHRINE, THE ARCHITECTURAL GLORY OF WHICH IS WELL KNOWN ALL OVER THE WORLD

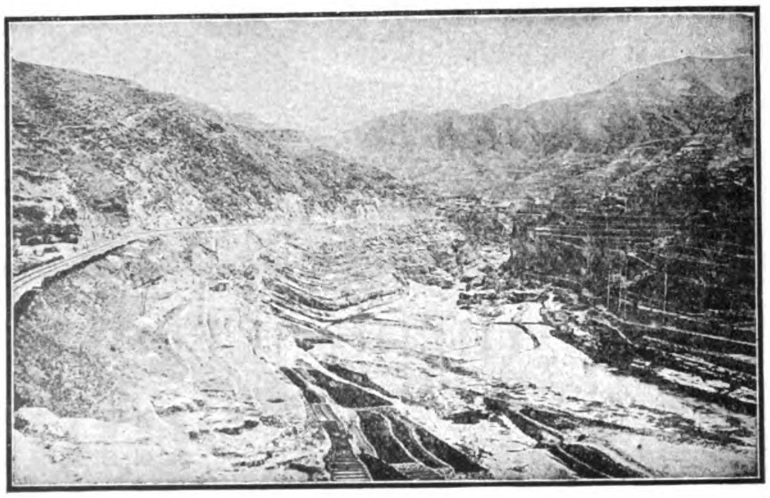
KIYOMIZU TEMPLE, COMMANDING A BIRD'S-EYE VIEW OF KYOTO

CHINESE GOVERNMENT RAILWAYS

CHENG-TAI RAILWAY

(Chinese Government Shansi Line—Chengtingfu to Taiyuanfu)



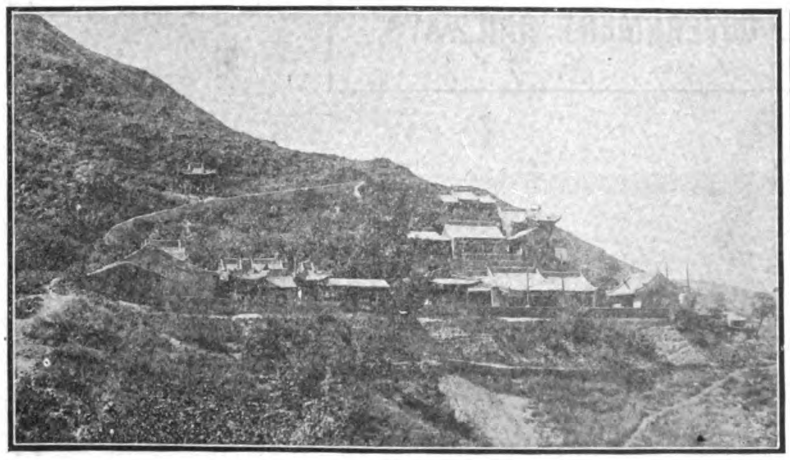


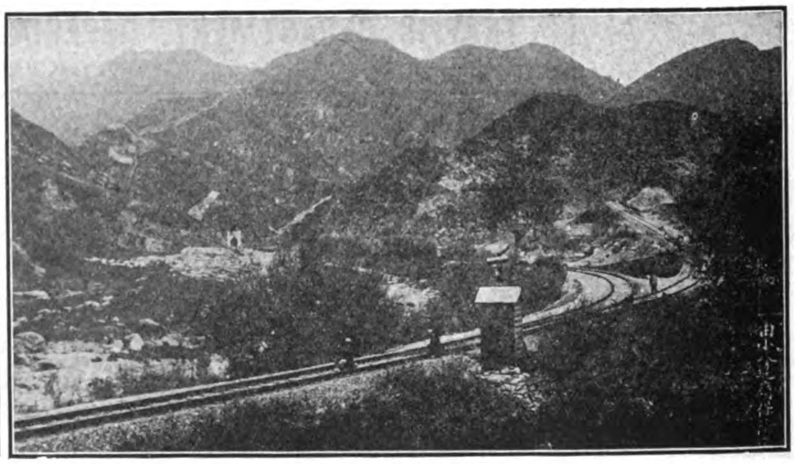
VIEWS ALONG ROUTE OF CHENG-TAI RAILWAY

The trains of this line connect with the through service of the Peking-Hankow Railway, affording Travellers the opportunity of seeing the most picturesque part of China. The line passes through a mountainous section of country, rich in Mineral Resources to the Provincial Capital of Shansi at Taiyuanfu. This interesting city is a great educational centre, and famous for the fine quality of its artistic embroideries.

PEKING-SUIYUAN LINE

"The Road to the Great Wall"

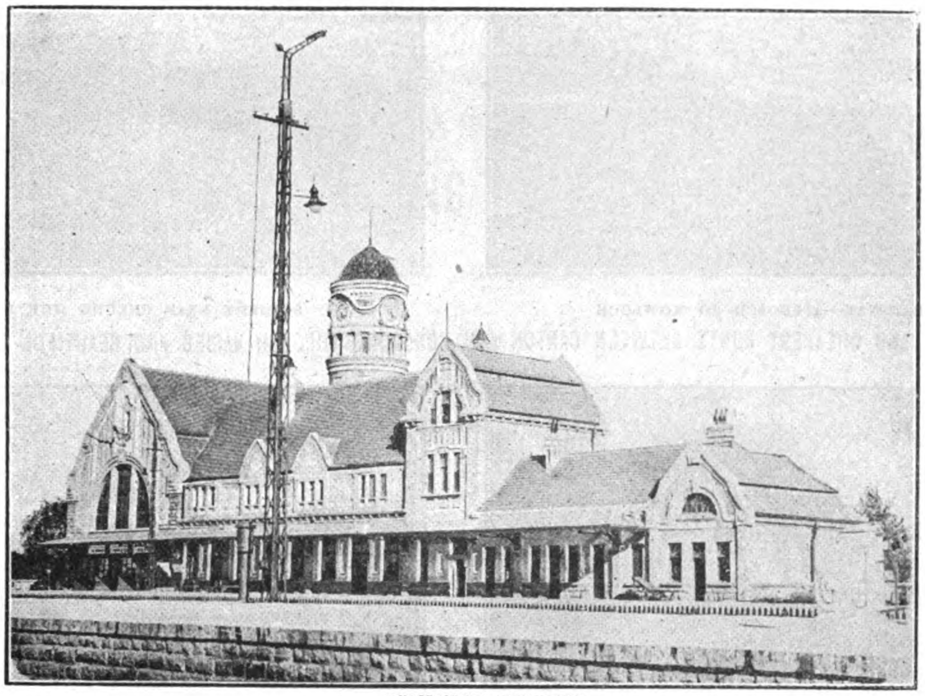




This line follows the ancient caravan route and military highway from Mongolia into China by the way of the historic Nankow Pass. This pass is the Key to Peking, and Kalgan is the gate of the Country. From here the great camel caravans set out on their long journeys across Mongolia to Siberia and Central Asia. This old frontier mart, retaining its time-honored characteristics, one of the most interesting sights of the Old World, is made accessible by the new railway. The line also carries the passenger in two hours from Peking to Nankow, when the Great Wall of China and the Ming Tombs may be seen. A foreign hotel is operated by the railway authorities at Nankow, where chairs and guides may be secured for the Tombs.

CHINESE GOVERNMENT RAILWAYS.

TIENTSIN-PUKOW LINE.



TSINANFU STATION.

THE above-named line, with its SOUTHERN end at PUKOW and NORTHERN end at TIENTSIN is having its through mail trains equipped with SLEEPING and BUFFET CARS running both ways every day. Comfortable seats and best meals are supplied on the trains. SANITARY ARRANGEMENTS are kept in perfect order and condition. A ferry steamer of modern type is provided for the conveyance of passengers across the river BETWEEN NANKING and PUKOW. Along this line travellers are afforded the opportunity of seeing the views of the country and many places of historic antiquities that will serve interest to the travelling observers. The time for the running of the trains are so scheduled as to make them CONNECT WITH the trains of the SHANGHAI-NANKING LINE on the southern terminus and those of the PEKING-MUKDEN LINE at the northern end. Travellers who intend to go to PEKING, KALGAN, TATUNG, MUKDEN, SOUTH MANCHURIA and SIBERIA or VICE VERSA are enabled to effect their journeys of a great distance at a very short space of time, it being considered the SAFEST and QUICKEST route for the travelling public.

For further particulars, please apply to:

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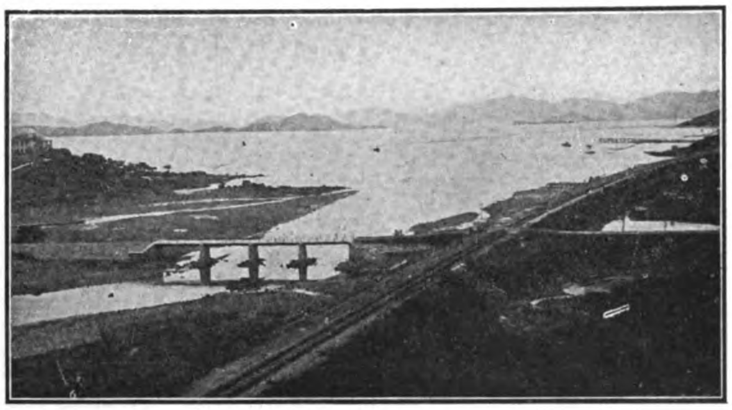

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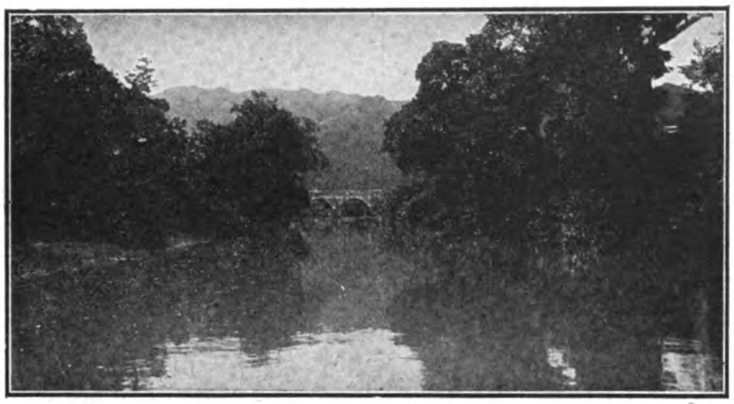

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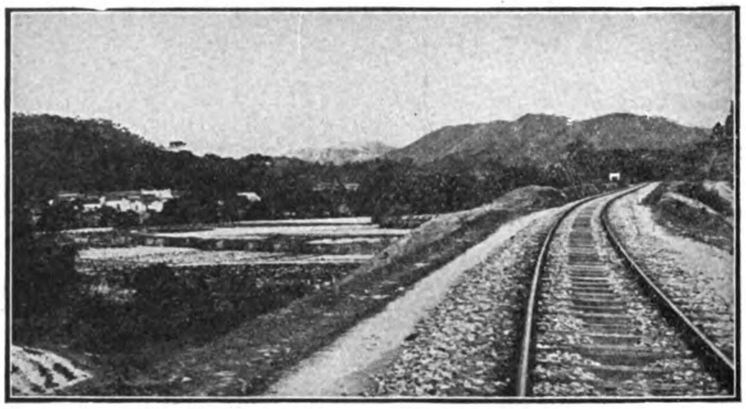

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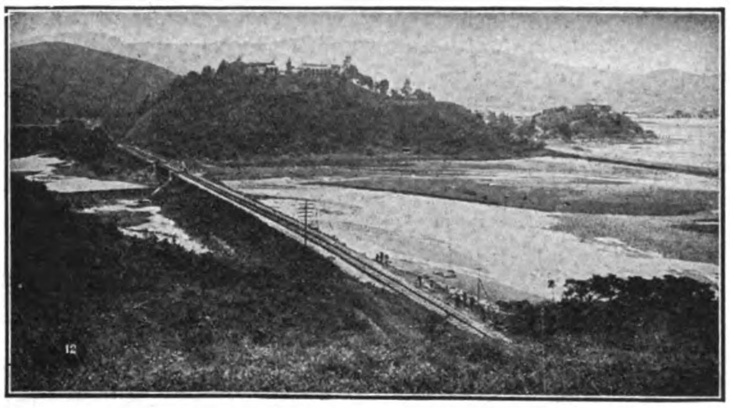

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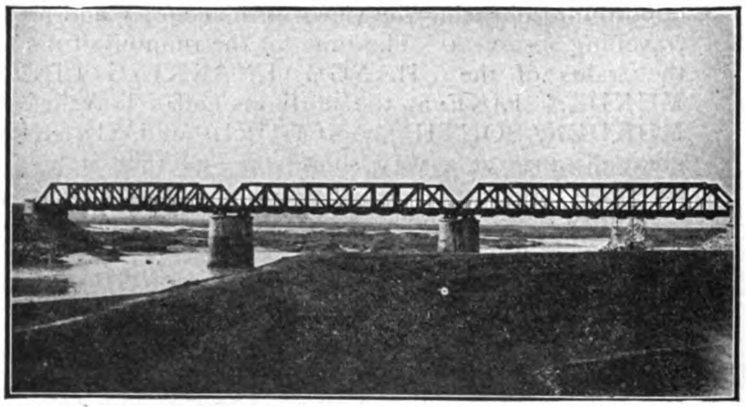

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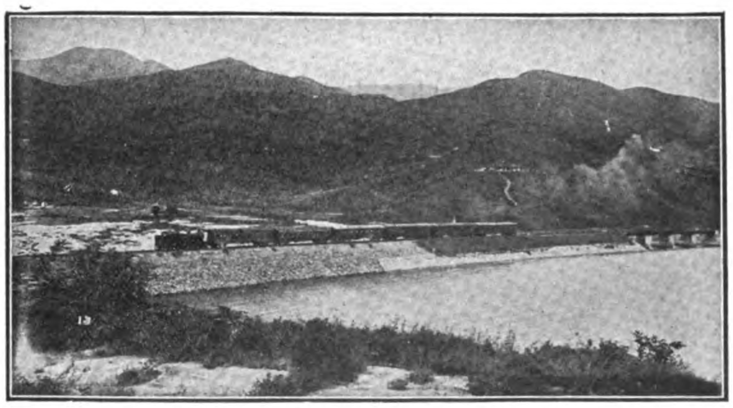

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GRAND CURVE NEAR SHEUNG PING

TIME TABLE from November 7th, 1918

Leave Hongkong (Kowloon) *8.05, 9.20 a.m., *3.00 p.m.
Arrive Canton (Tai Sha Tou) 11.50 a.m., 5.10, 6.40 p.m.

Leave Canton (Tai Sha Tou) *7.30, 8.35 a.m., *3.30 p.m.
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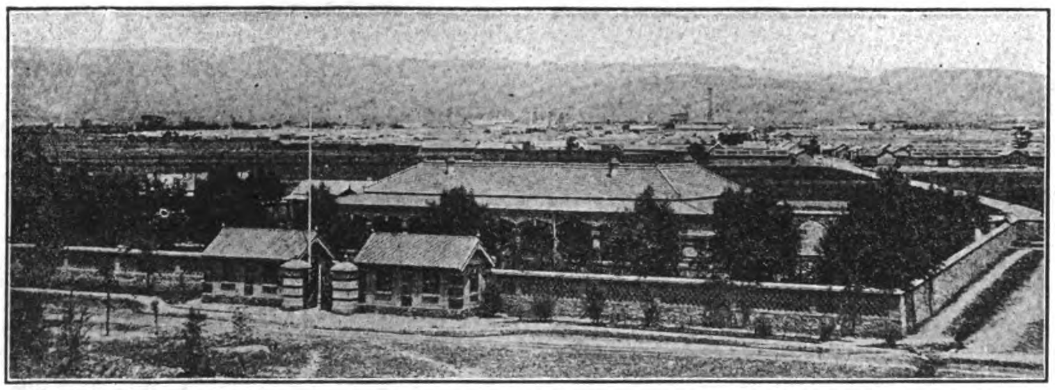

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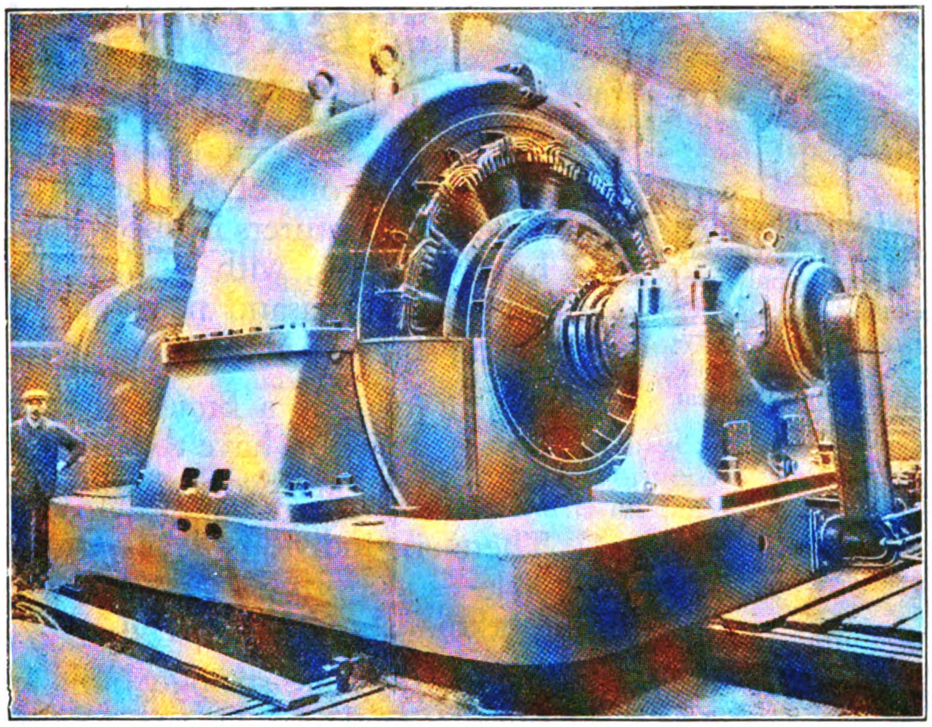

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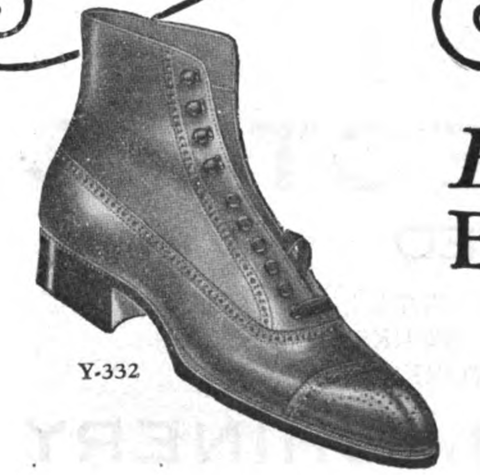

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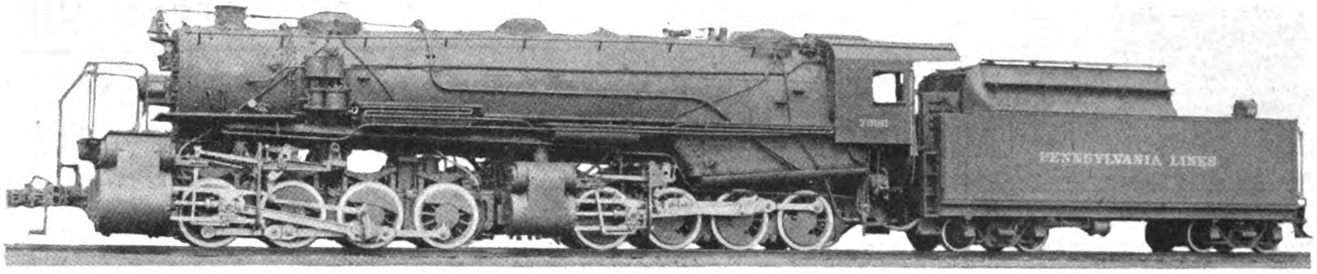

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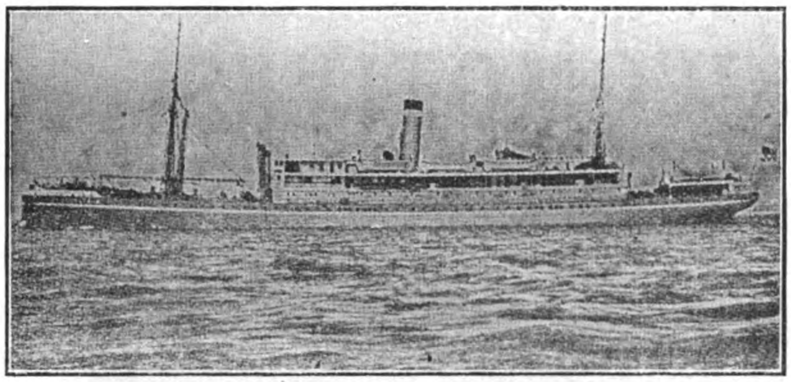

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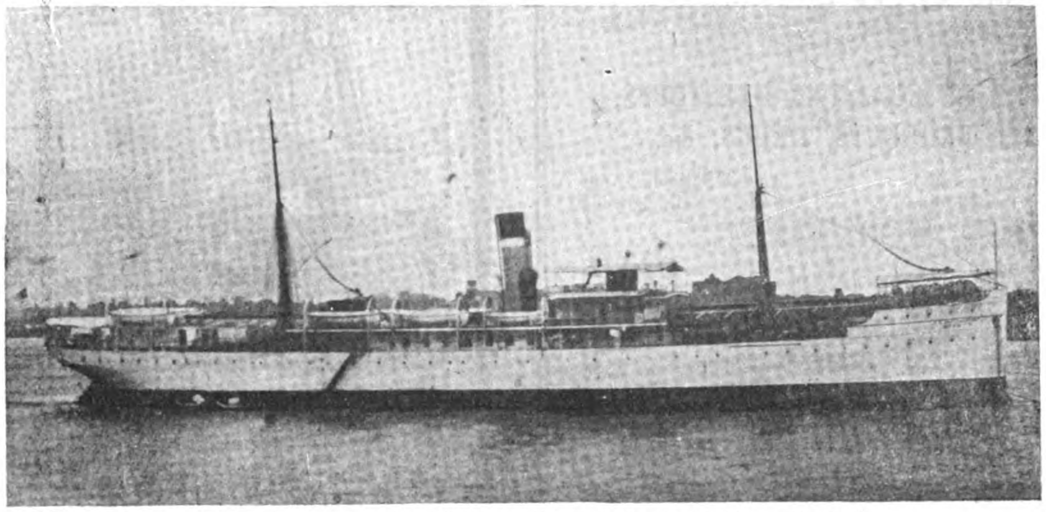

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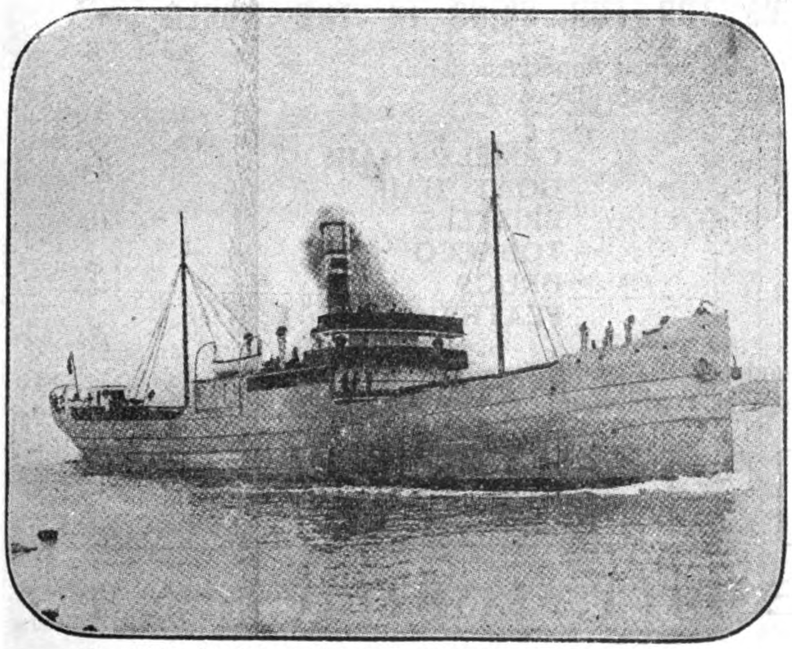

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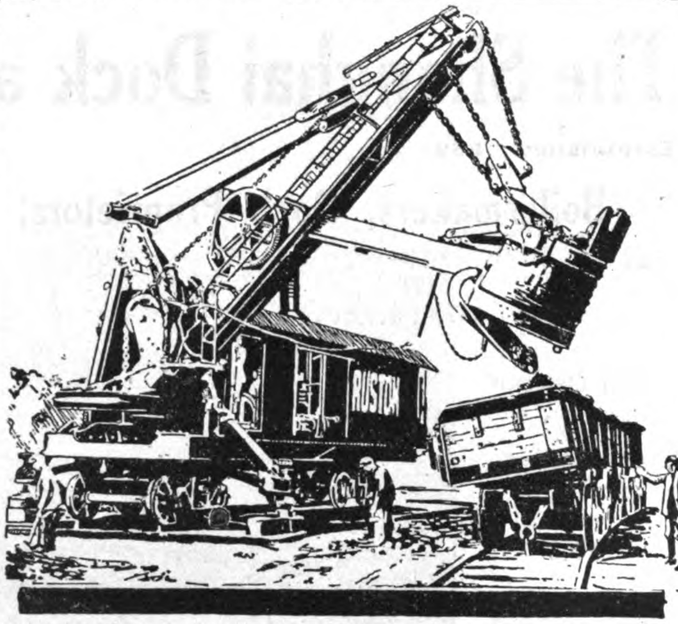

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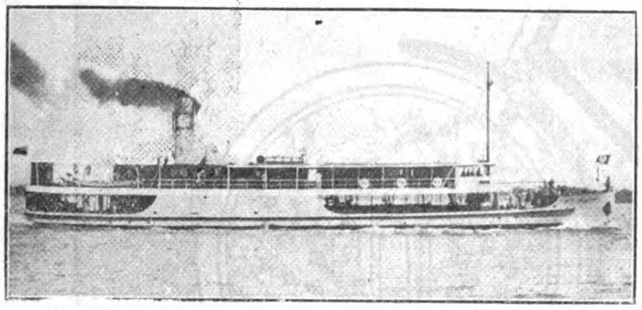

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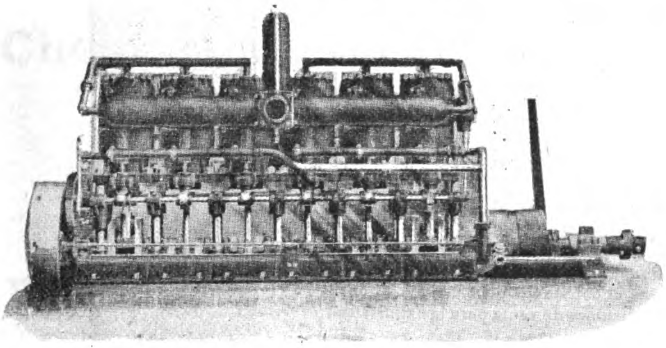

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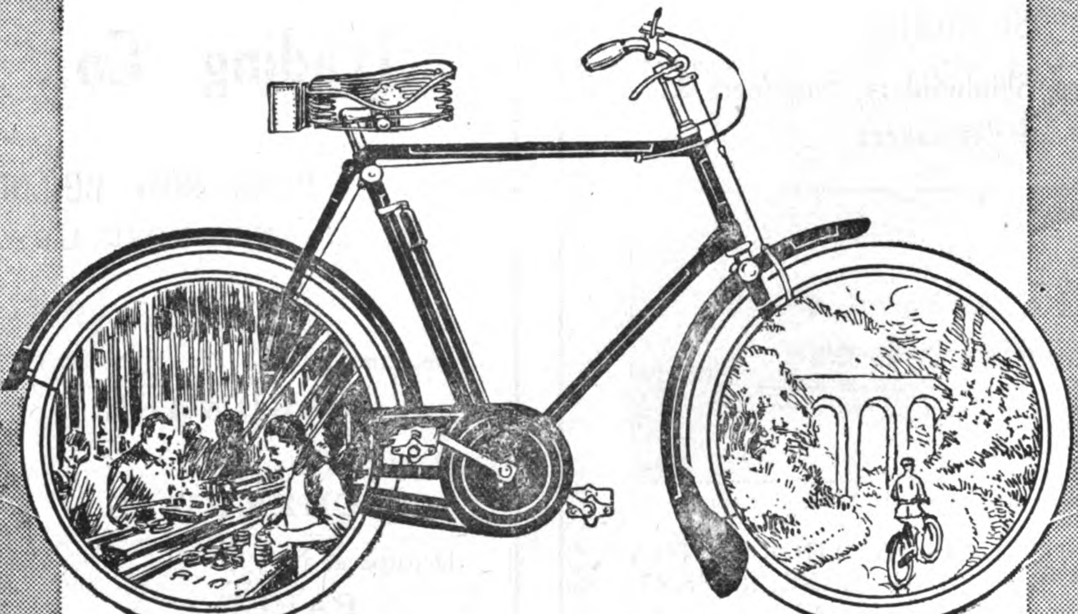

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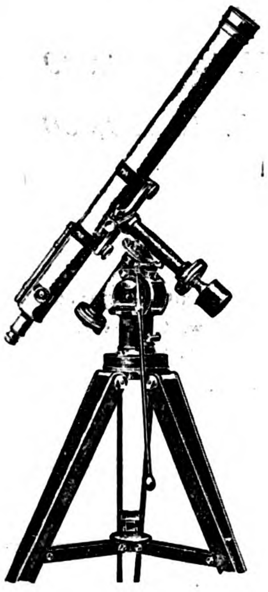

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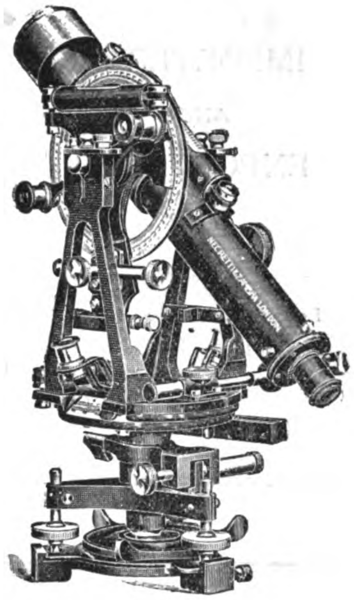

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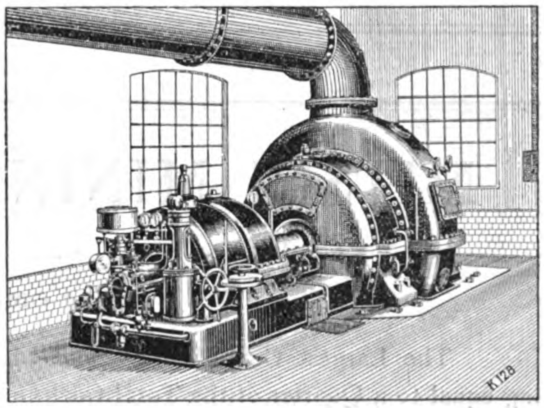

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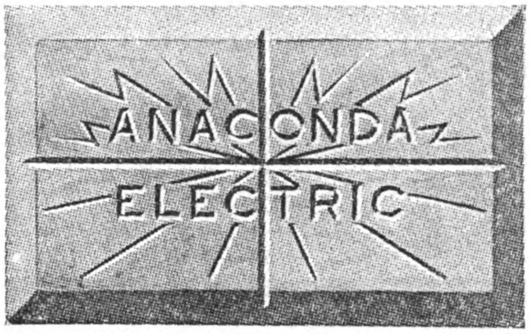

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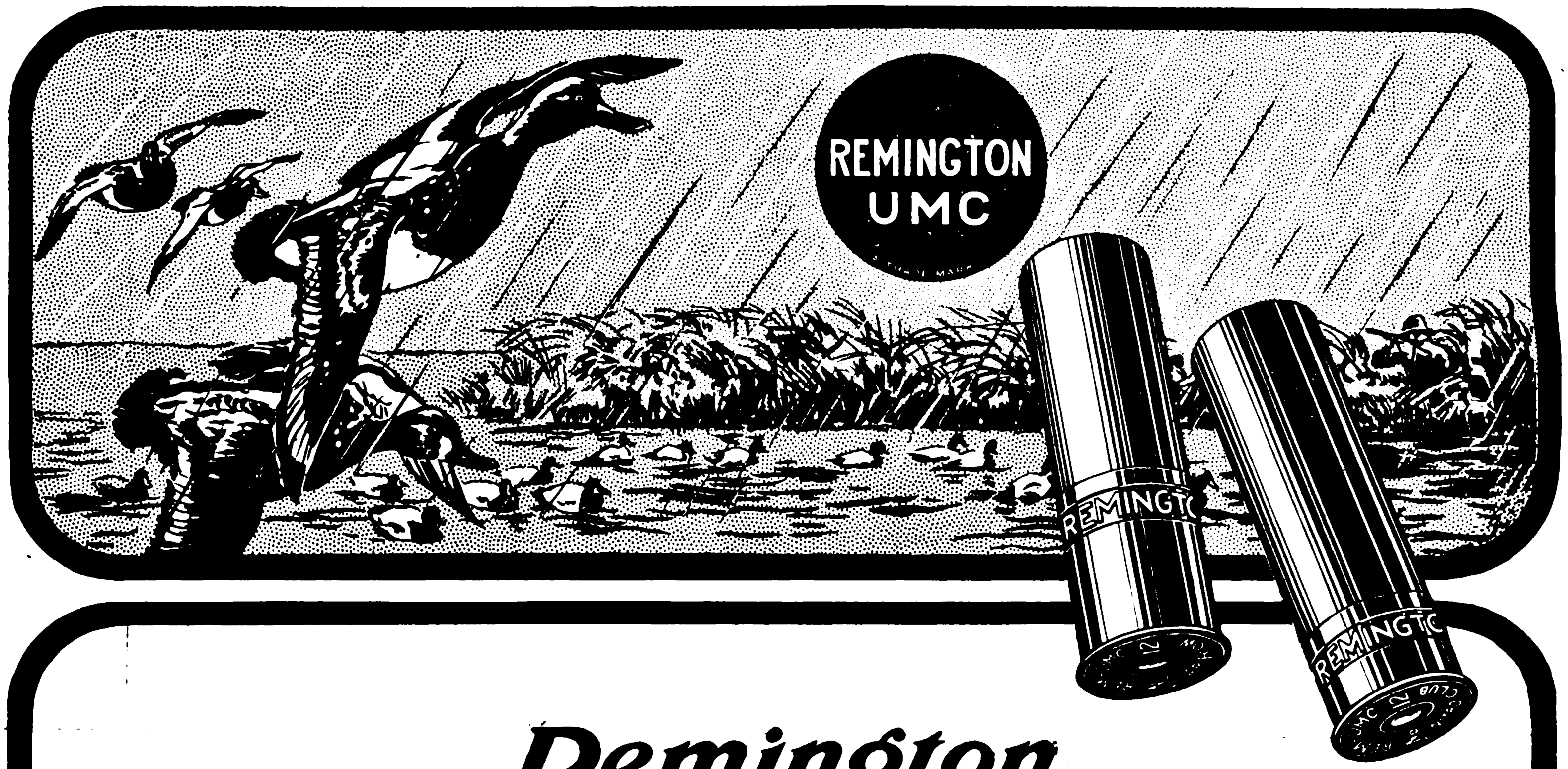

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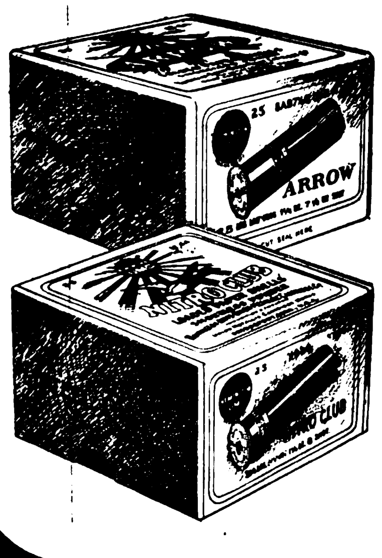

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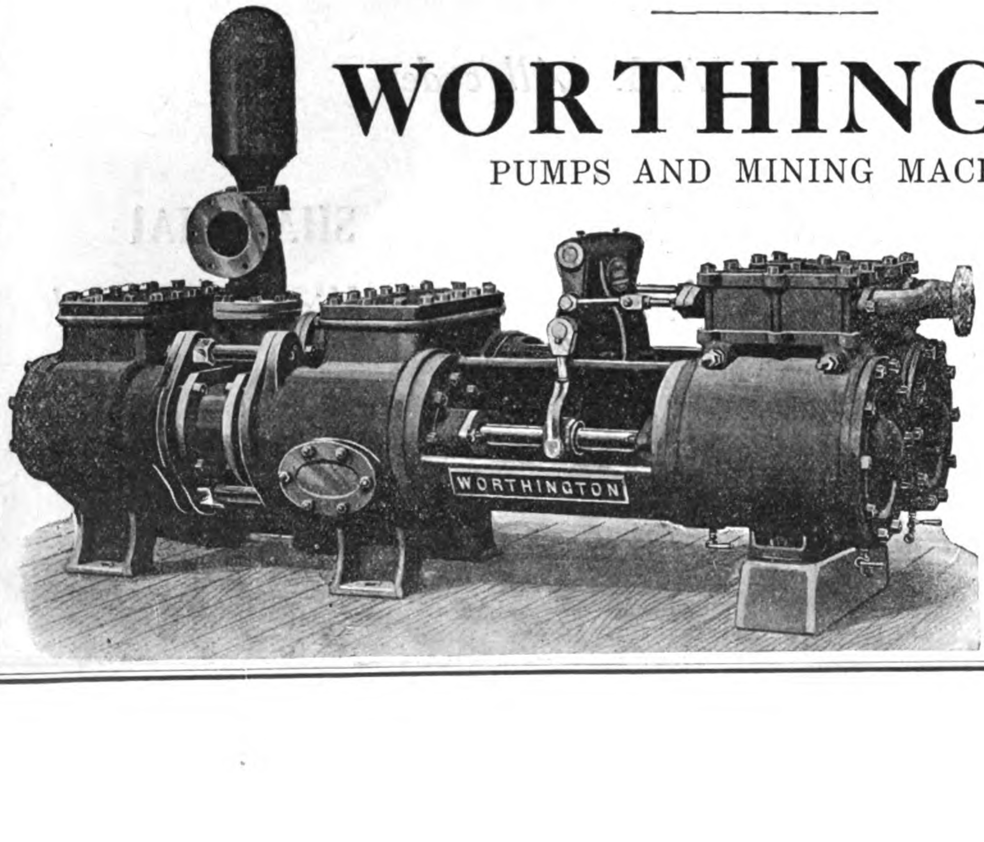

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The Far Eastern Review

ENGINEERING FINANCE COMMERCE

VOL. XVI SHANGHAI, JANUARY, 1920 No. 1

Proposed Railway Routes into Szechuan

A Discussion of the Merits of the Two Sole Possible Lines

ONE of the greatest and most important tasks that the Chinese Government has before it is to provide proper and adequate railroad facilities for the young Republic of China. With an area larger than the area of the United States of America and a population over three times as great China to-day has only 6,836 miles of railway including both Government and concession railways, as compared with more than 250,000 miles of railroad in the United States. Although more than 10,000 miles of railway are now projected, or proposed, in China, there is very little or no actual construction work under way. But it seems certain that in the very near future work will be resumed upon a large scale and that the next decade may see more railways constructed in China than in any other country in the world.

One of the most important railway propositions in China to-day and one of the most interesting railway engineering problems in the world is that of building a line into the great

Showing one of the cliffs of the Lungmen Gorge on the Upper Yangtze

Province of Szechuan. Such a line would serve one of the richest, most populous, and productive provinces in all of China and would open up a veritable empire containing more than 218,500 square miles, an area larger than France, or Germany before the war, and almost one and one-half times as large as Japan.

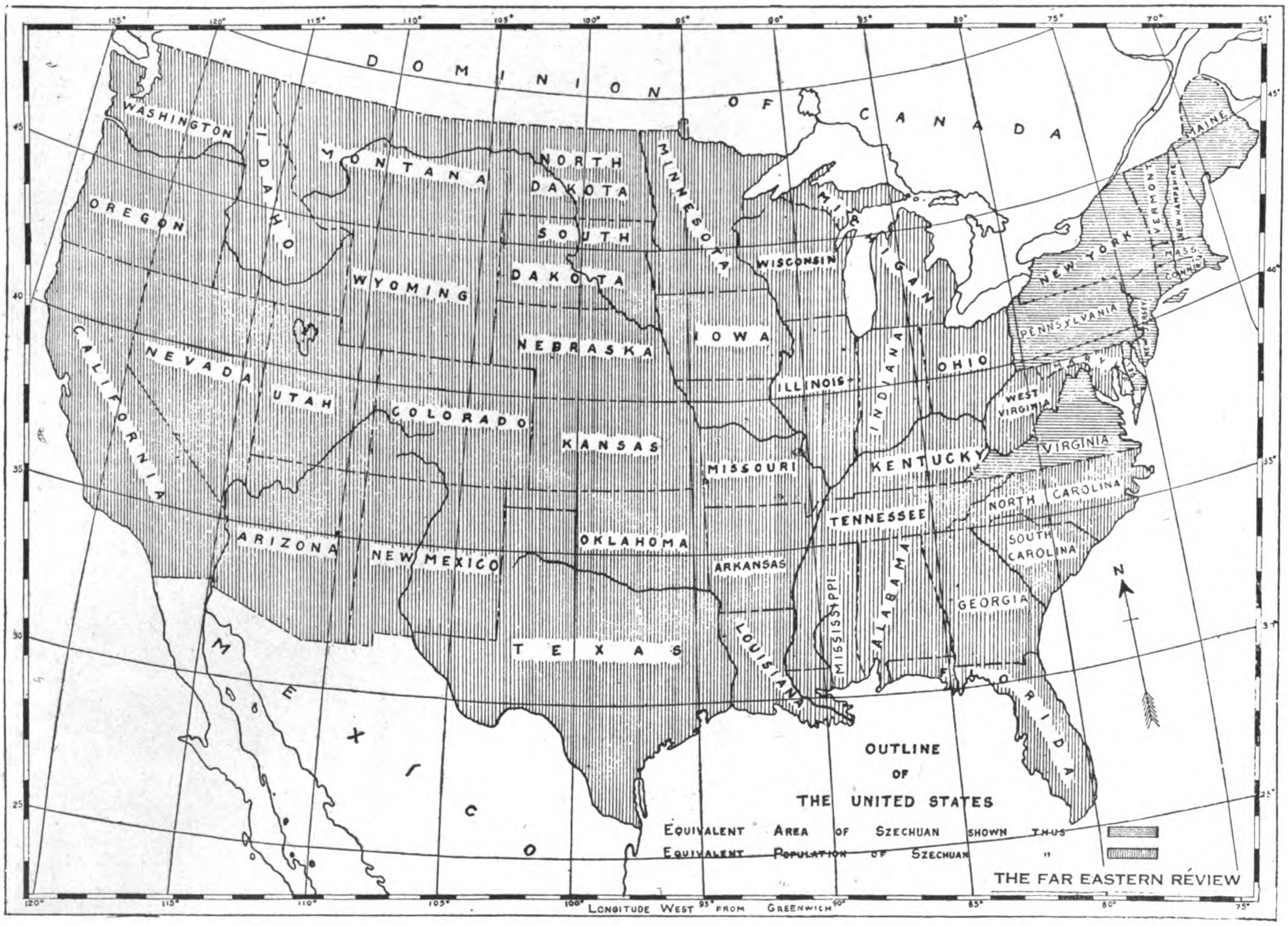
In comparison with the United States of America, the *area* of the Province of Szechuan is *larger* than the *combined area* of the eleven States of Maine, New Hampshire, Vermont, Rhode Island, Connecticut, Massachusetts, New York, New Jersey, Pennsylvania, Delaware, and Virginia, while its *population* is but one-fifth less than the *total population of the entire United States of America*, and is *greater* than the *combined population of all of the other thirty-seven States of the U.S.A. not mentioned above.* The accompanying map of the United States of America shows the equivalent area of the Province of Szechuan and the portion of the United States containing a total population equivalent to that of Szechuan.

Two routes have been surveyed for railroads into the Province of Szechuan, with a view to connecting Chengtu, the Capital of the Province, with the present operated railways of the Chinese Government. The first of these routes, the projected Szechuan-Hankow Line, begins at Hankow, and, proceeding westerly follows up the mighty Yangtze River, passing through the difficult gorges of the Yangtze to Chungking, thence northwesterly to Chengtu, a total distance of 939 miles. This route was surveyed by various foreign engineers under the Hukuang Line contract. For the sake of clearness in the following discussion, this route will be called the Yangtze River Route.

The new route into Szechuan, surveyed by American engineers under the contract between the Chinese Government and the Siems-Carey Railway and Canal Company, connects with the present-operated Peking-Hankow Line at Sinyangchow, a point 131 miles north of Hankow, and proceeding in a general north-westerly direction follows up the drainage of the Han River to a point called Tzeyang where the course turns southwesterly and crossing the Main Divide between Szechuan and Shensi enters the rich Province of Szechuan and after passing several large cities and many smaller towns and villages reaches Chengtu, its western terminus. The total length of this line is 895 miles. This route we will call the Han River Route, for the sake of convenience, in the comparison which follows.

In the Far Eastern Review of July, 1918, the proposed new Han River Route into the Province of Szechuan was discussed in considerable detail. However, at that time, complete data relative to these surveys were not available, and it was, therefore, impossible then to compare this route with the Yangtze River Route with a view to determining which would best serve the needs of the country.

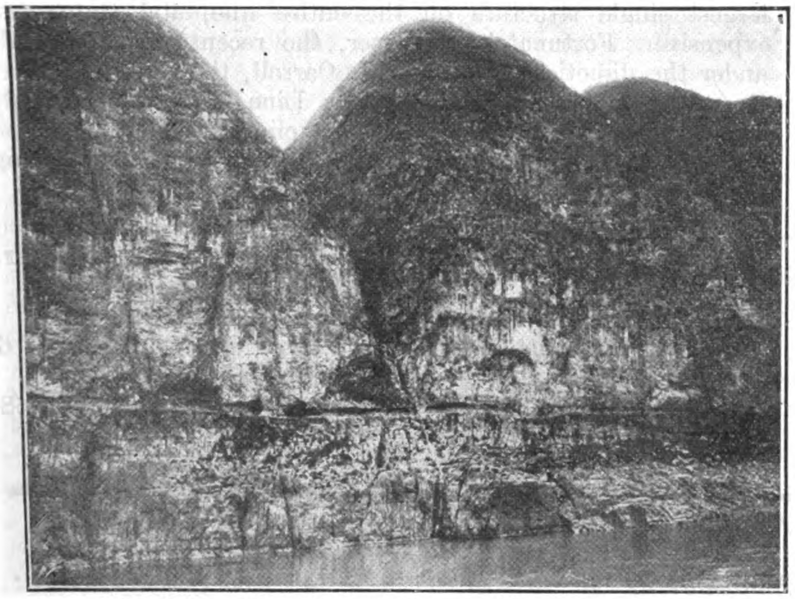
Now that more complete information is available regarding the surveys of the Han River Route, and particularly the surveys of that portion of the line across the Main Divide, it is of interest to consider the relative advantages

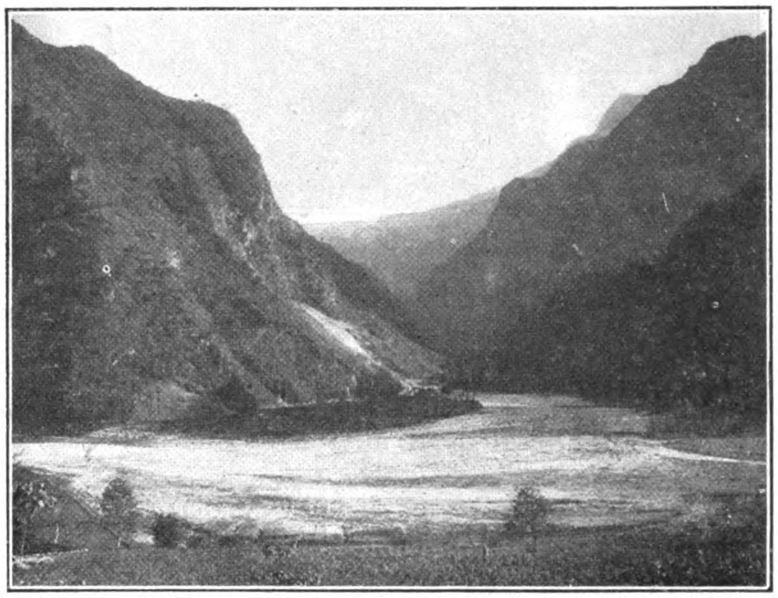


Map showing how the population and the area of Szechuan compare with those of the United States

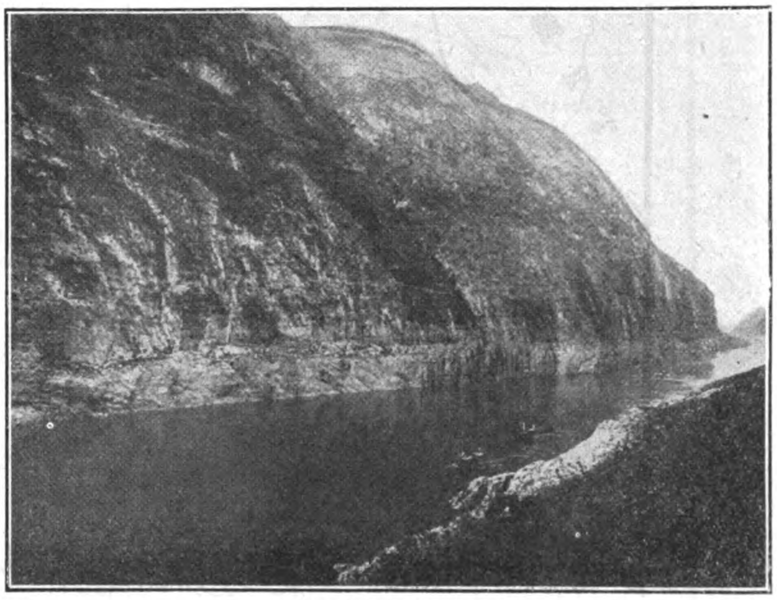
Windbox Gorge, near Kweichowfu. Note the path for trackers of junks

The Lungmen Gorge


One of the Walls of the Wushan Gorge. Note pathway for trackers carved out of the solid rock


The Sanshi Gorge on the boundary line between the Provinces of Hupeh and Szechuan

Niukaumafai Gorge


Wushan Gorge

Views showing the difficult country in the Yangtze Gorges

and disadvantages of this route as compared with the Yangtze River Route, and particularly in view of the statements made in recent articles appearing in a contemporary publication concerning the Yangtze River Route.

The Yangtze River Route

Szechuan has often been described as a bottle, of which the Yangtze River is the neck—and the only means of ingress and egress. Surrounded on all sides by mountain

Ichang at High Water

ranges, Szechuan is indeed an inaccessible province. On the east the Yangtze River has cut its way out through the solid rock in a series of great gorges which for grandeur of scenery surpass anything in China and rival many of the scenic routes of the world. In its course to the sea, the Yangtze passes through these gorges for a distance of more than one hundred miles. At many points the mountains rise almost perpendicularly hundreds of feet above the river. During the high water season the Yangtze rises rapidly and reaches a height of 175 feet above its low water level when it becomes a veritable cataract of stupendous size and power.

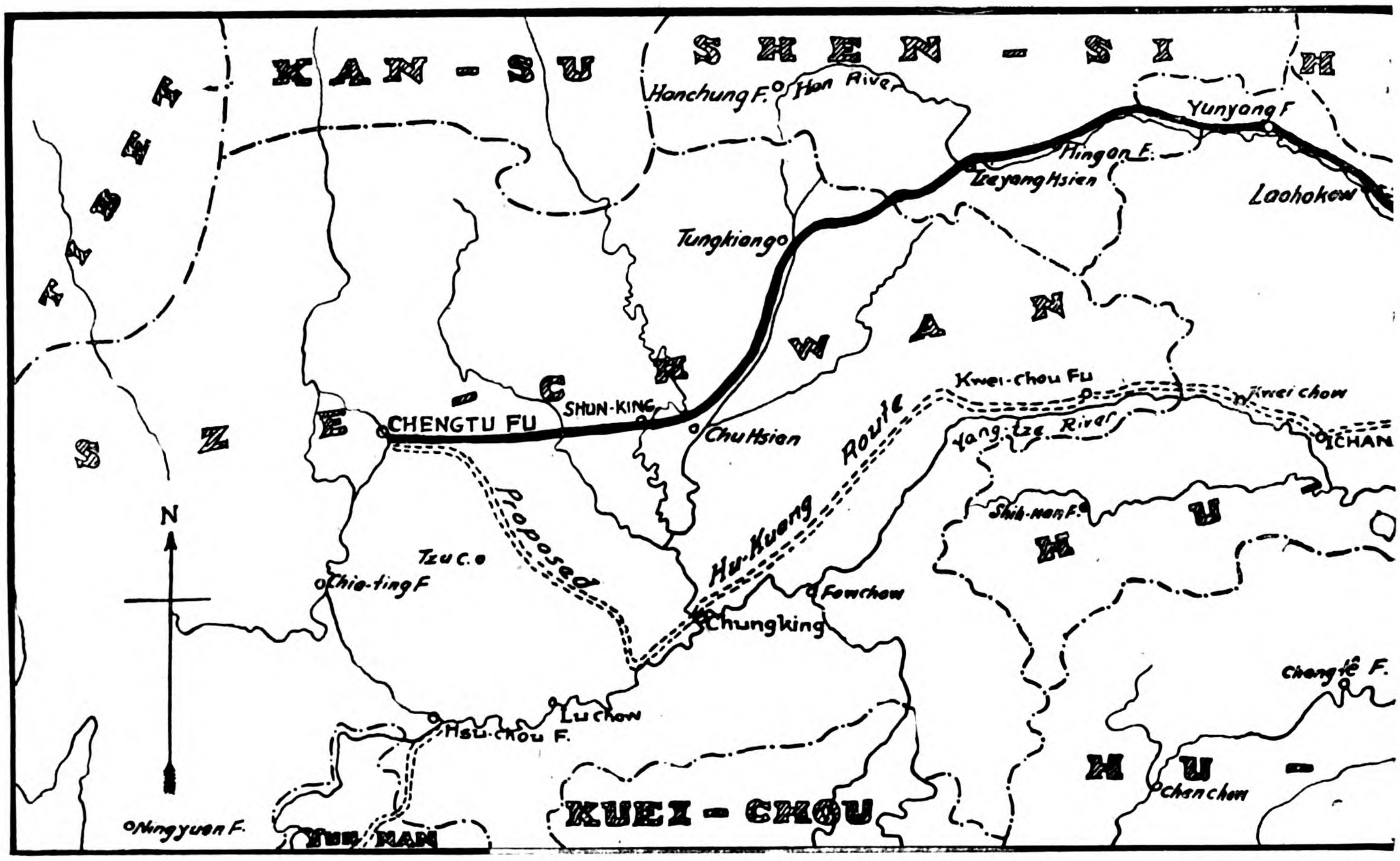
At the present time the Yangtze River affords the only means of transportation for the immense inland empire of Szechuan, but the numerous shoals, whirlpools and rapids in this river make navigation exceedingly dangerous and only certain kinds of small river craft undertake the trip through the gorges on account of the great hazards and perils involved. The history of navigation on the Upper Yangtze is filled with tragedy for this great stream has taken an awful toll of human lives as well as of boats and merchandise.

The survey of the Szechuan-Hankow Line follows up the Yangtze River and through the gorges at an elevation safe above high water. This, however, necessitates some very heavy and difficult construction.

As originally surveyed, it was proposed to construct a great tunnel, more than three miles in length—or 17,000 feet, to be exact—at a point on the Yangtze River called Nanto. This long tunnel as originally planned would be the largest single structure on the entire line, and the most expensive. Fortunately, however, the recent surveys made under the direction of Mr. C. J. Carroll, the present Chief Engineer of the Szechuan-Hankow Line, show conclusively that the big Nanto tunnel may be eliminated entirely and a more favorable and less expensive line obtained by following the general course of the river.

Comparison of the original tunnel route with the revised river route shows that the river route is far better, because :—

(1) It reduces the length of line by 3,975 feet.
(2) It reduces the maximum curve from 8 degrees to 6 degrees.
(3) It reduces the total curvature by 1,029 degrees 58 minutes.



Map showing the two Projected Routes to Szechuan with

(4) It reduces the maximum grade from 1.25 per cent. to 0.317.
(5) It reduces the rise and fall by 767 feet.
(6) It effects a saving of $2,585,000 on construction of sub-grade alone and a total saving of $3,226,000 on all items to be taken into consideration.

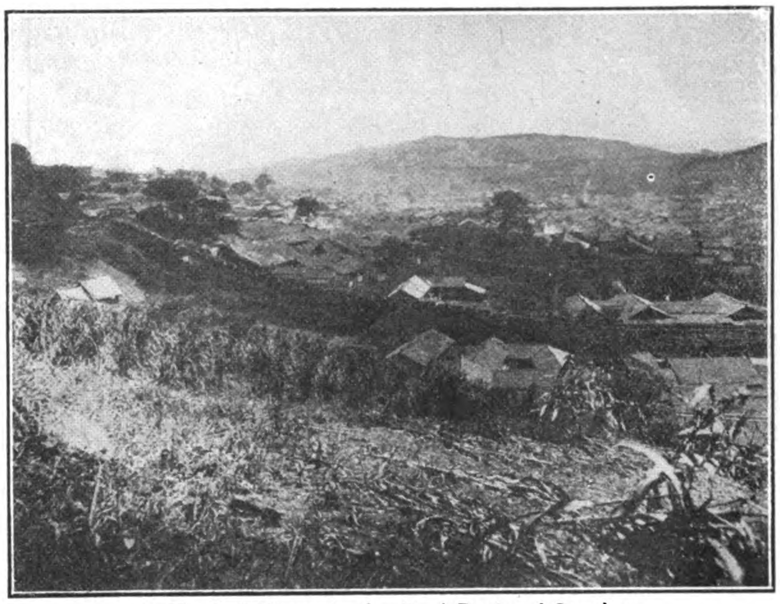
After leaving Nanto the route of the Szechuan-Hankow Line follows on up the Yangtze River to a point above Chungking, where it turns sharply to the northwest and leaving the Yangtze River proceeds cross-country to Chengtu.

The accompanying photographs of views taken along the Yangtze River Route give a far better idea of the character of the country and the general conditions than any mere written description could possibly give. These views serve to make more clear the enormous difficulties that would be encountered on this route and the great natural obstacles which bar the way. Not that this route is considered impossible, for it is not; all the physical obstacles can be overcome, but it is a question of choosing the route which will best serve the country, taking into account the various factors which enter into the consideration of the subject.

Few, if any, more difficult surveys have ever been carried out than the surveys of the Szechuan-Hankow Line through the gorges of the Yangtze, and great credit is due the Engineers for the resourcefulness and ability shown in the performance of their work under most trying and most difficult conditions, for more than one life has been lost in carrying out these surveys.

The Han River Route

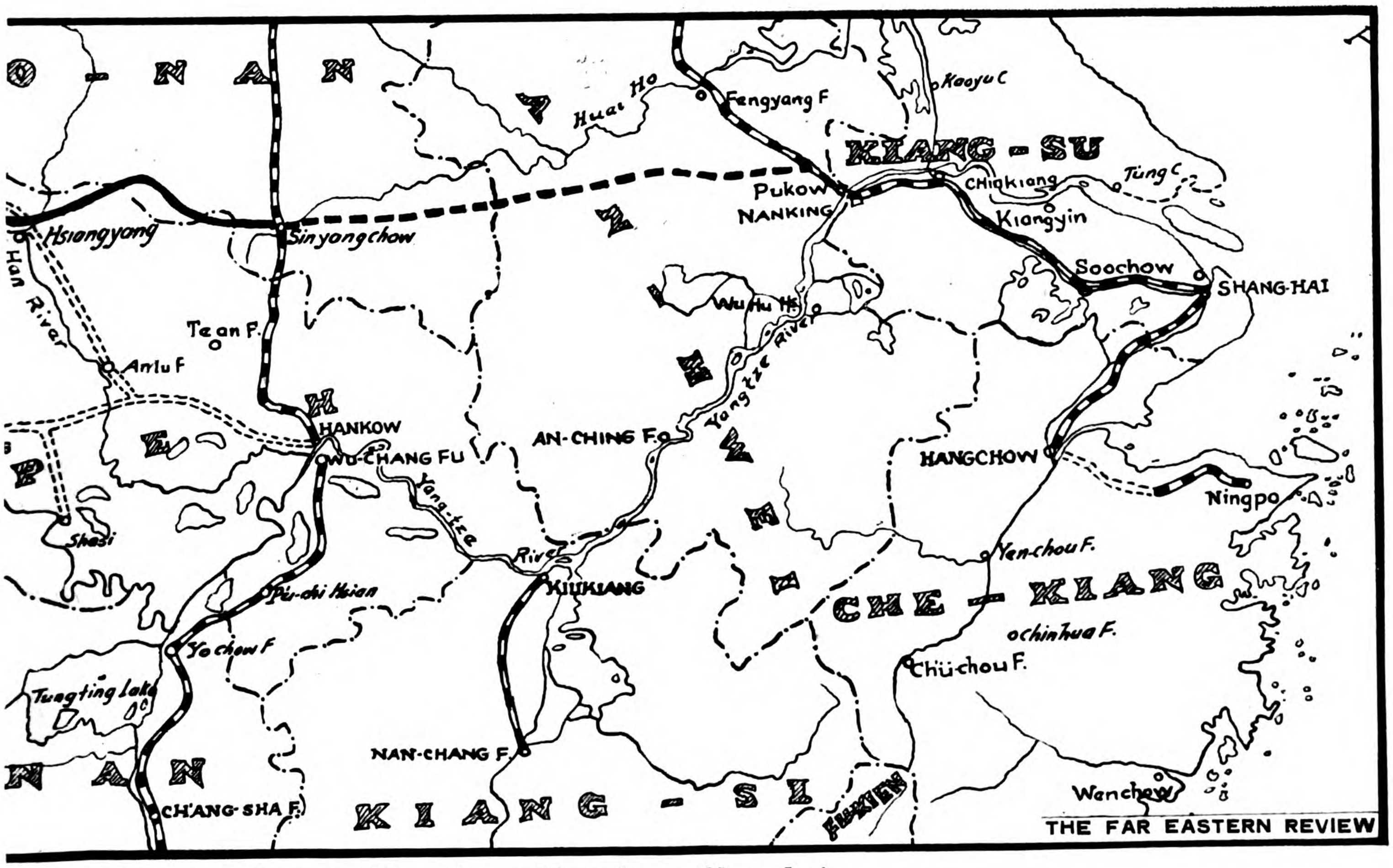
The idea of reaching Szechuan by the Han River Route is not new; on the contrary it is said that this route was first selected, but after a preliminary examination in which no suitable pass was found in the Main Divide which separates Szechuan from Shensi it was decided to attempt to enter Szechuan through "the neck of the bottle"—that is, via the Yangtze River Route. But notwithstanding the previous adverse reports on the Han River Route, the American engineers decided upon a thorough, careful, reconnaissance of the entire country, to ascertain if a satisfactory line could be obtained via this route, although



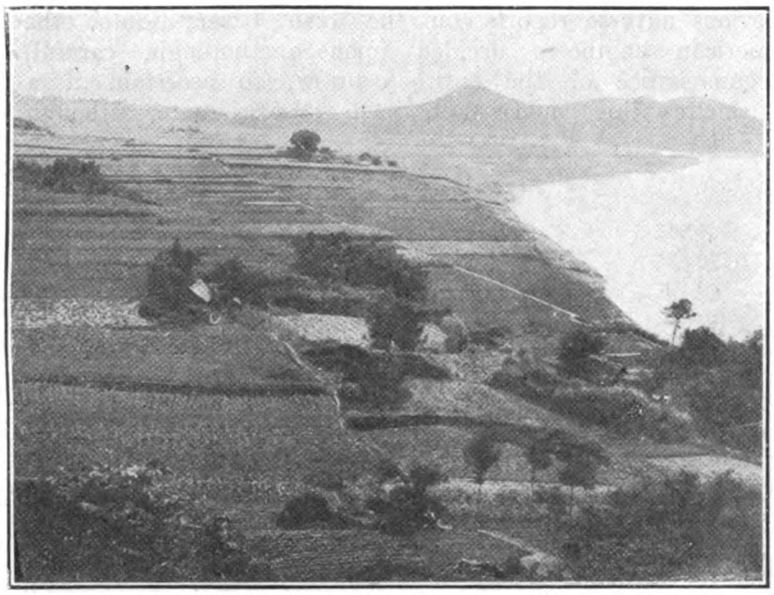
A Typical Town in the Red Basin of Szechuan

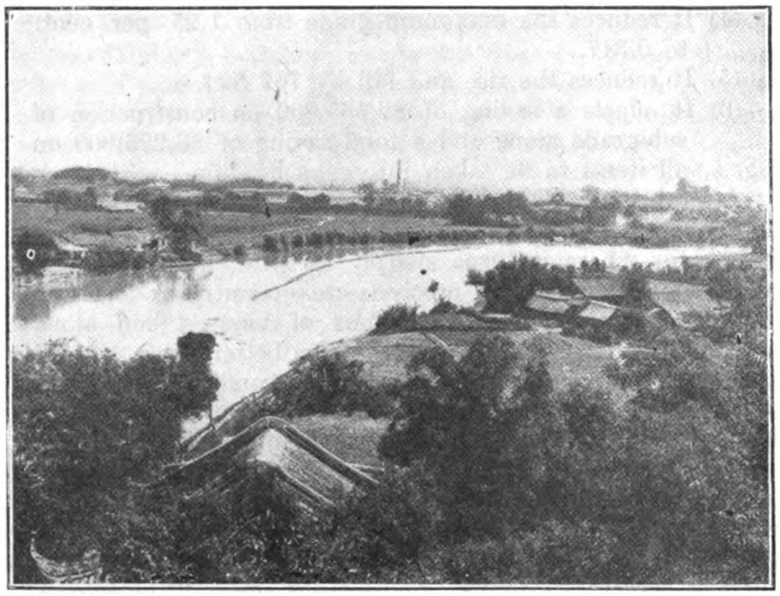
reconnaissance surveys aggregating 4,000 miles were made over this route and the wisdom of this course of action was justified by the finding of a suitable crossing of the Main Divide and by obtaining a very satisfactory route for a railroad through the most difficult part of the country.

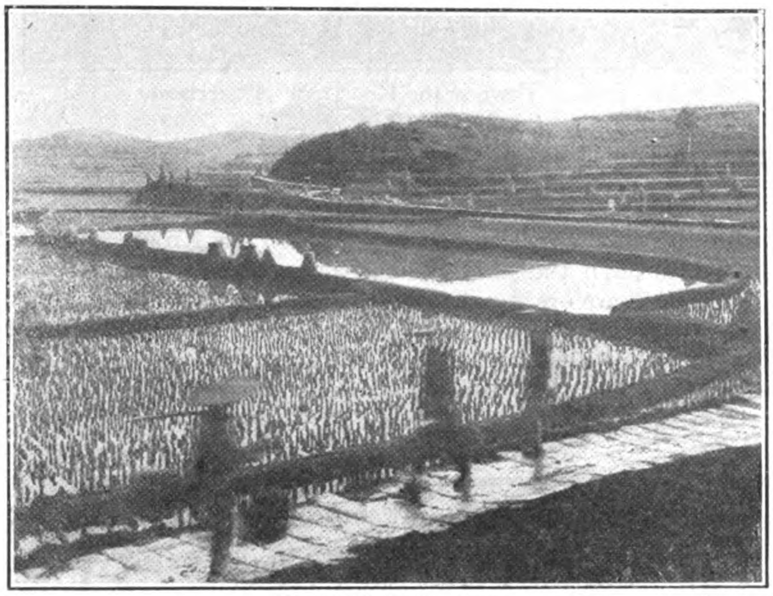
While there are rough, rugged, sections of heavy country traversed by the Han River Route these do not compare with the similar sections of the Yangtze River Route where the natural obstacles, difficulties, and hazards are far greater and more serious.

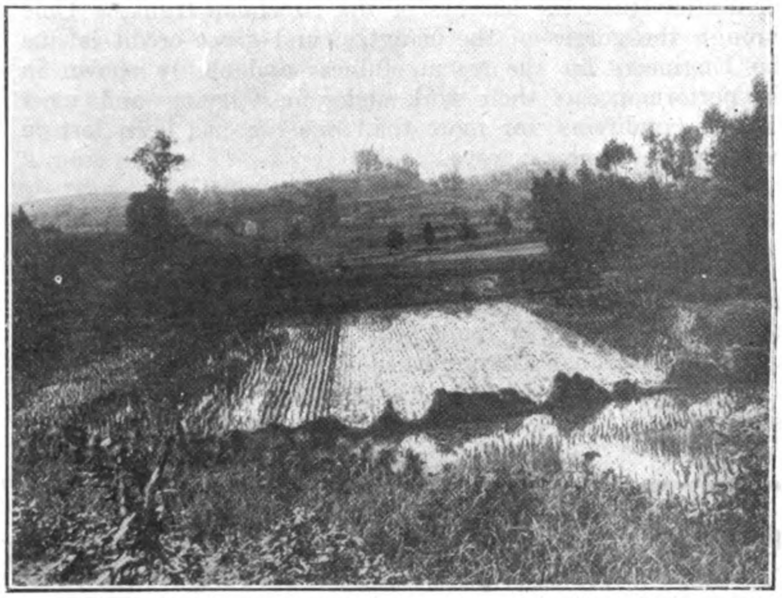


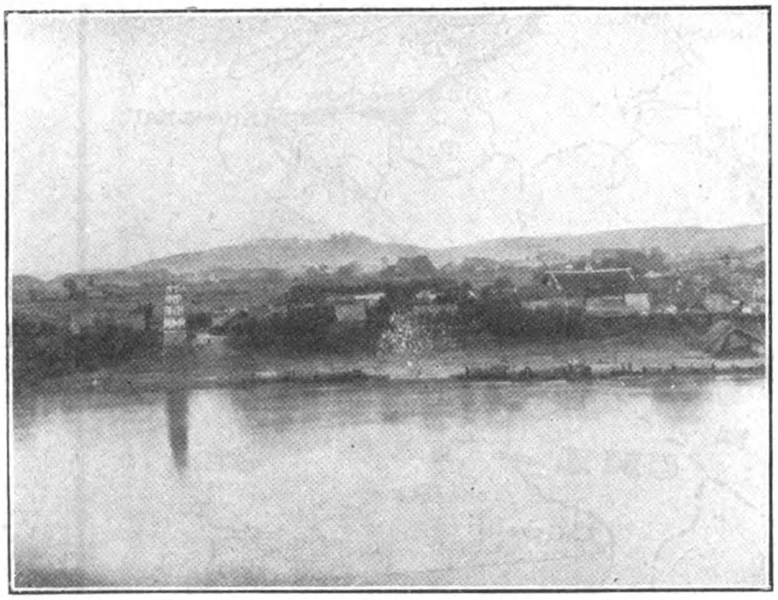
emphasis upon the possible Direct Line from Shanghai


Cultivated fields on the Luho river, Szechuan


View of country near Chengtu, showing the arsenal in the middle ground


Rice fields in Szechuan


Agricultural country typical of portions of the Red Basin


The city of Tzuyanghsien

Typical cultivated country in Szechuan near Shahochiao

Views of typical Szechuan country through which any railway must pass

It should, however, be borne in mind that there is no royal road to Szechuan—there is no primrose path into this great inland empire. If there were it would long ago have been occupied by a main trunk railway which would to-day be busily engaged in transporting the enormous commerce of the vast province.

The accompanying photographs of views along the Han River Route illustrate only the worst part of the country, others of a general character were published by us in July, 1918. There are also submitted views of Szechuan—the "Promised Land" of China, as it might be called—a land of fertile fields and many harvests rich in agricultural, mineral and other resources. These views are intended to give an idea of the various sections of country which the proposed railroad would serve, and they are typical. They do not represent small isolated spots, they represent the largest and most extensively cultivated area of agricultural land in all of China.

Comparison of Yangtze River Route with Han River Route

In the following comparison of routes the figures given of the Yangtze River Route refer to the revised location made by Mr. C. J. Carroil, Chief Engineer, eliminating the Nanto Tunnel and effecting a saving of over $3,000,000 in construction cost, to which reference has already been made.

The Yangtze River Route is 938.8 miles in length, while the Han River Route is 895.5 miles long, or 43.3 miles shorter than the Yangtze River Route. The maximum gradient of the Yangtze River Route is 1.98 per cent. as against 1 per cent. maximum grade on the Han River Route.

Comparing rise and fall: the Yangtze River Route has 6,902 feet rise and 5,182 feet fall, as against 6,585 feet rise and 4,919 feet fall on the Han River Route. The maximum curve on the Yangtze River Route is 8 degrees whereas a maximum curve of 12 degrees was used on the preliminary survey of the Han River Route.

The total estimated cost of constructing and equipping the Yangtze River Route is $212,608,700, whereas the total estimated cost of constructing and equipping the Han River Route is $177,211,600, or a difference of $35,397,100 in favor of the Han River Route.

The Han Rive Route, therefore, has the following advantages:—

It is shorter,
Its maximum grade is less,
Its total rise and fall is less,
Its estimated cost of construction is less.

Typical gorge country near the Wushan Gorge

On the other hand, the maximum curve on this route can be made the same as that of the Yangtze River Route, as the topography of the country is more favorable along the Han River Route.

In the matter of operation; by reason of its location the Yangtze River Route would inevitably suffer a far greater loss from water competition than the Han River Route. It is quite probable that the present river transportation on the Yangtze will be developed and improved as time goes on to such an extent that some of the most potent objections which can now be raised against transportation on the Yangtze, such as slowness of movement and unreliability of the carriers, may be overcome to a considerable extent.

It, therefore, appears from all the information which has thus far been obtained from the surveys of these two routes, that the Han River Route is the better route, as regards both physical characteristics and cost of construction.

However, important as each of the factors which appear in the foregoing comparison are in the consideration of this subject, it is believed that the time has come in the development of the transportation facilities of China when a broader view must be taken and the future development of the transportation system of the country as a whole should be given its proper value in determining upon the construction of any new line of railway to serve a section of country. In other words, the effect and the bearing which any proposed line into the Province of Szechuan would have upon the other Government railways, existing and proposed, and the way in which such a line would work into the general plan of railroad development, is worthy of serious consideration.

Looking at the situation thus broadly it is of interest and it is likewise important to consider the connections which both of these proposed lines will have to the seaboard and to consider which will provide the most direct, prompt and economical service in the transportation of the great tonnage of imports and exports into and out of the Province of Szechuan.

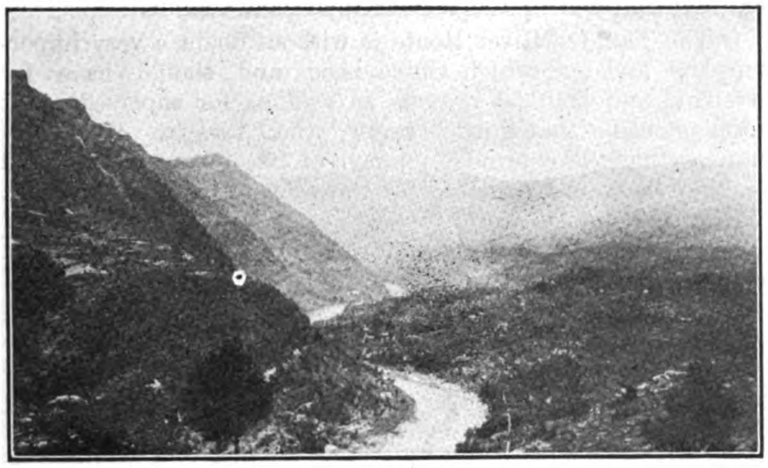
In the case of the Szechuan-Hankow Line, or Yangtze River Route, a transfer from railway cars to river boats will be necessary at Hankow. The distance by river from Hankow to Shanghai, the commercial metropolis of China, is 595.0 miles. The total distance from Chêngtu to Shanghai viâ this route—using the Szechuan-Hankow Line from Chêngtu to Hankow and using the Yangtze River boats from Hankow to Shanghai would, therefore, be 1,533.8 miles.

An alternate rail route would be viâ the Peking-Hankow Line from Hankow to Sinyangchow and thence viâ the proposed Pukow-Sinyangchow Line to Pukow, thence to Shanghai viâ the Shanghai-Nanking Railway. The distance from Hankow to Shanghai viâ this rail route would be approximately 616.5 miles, which added to the distance

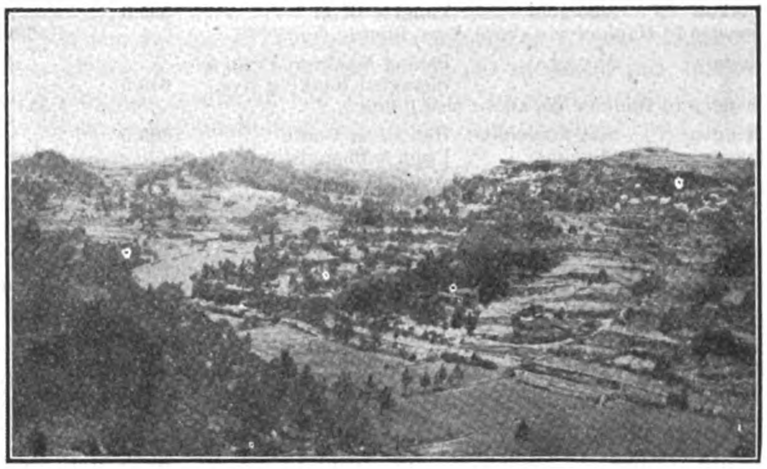
Yehtan Rapids

from Chêngtu to Hankow viâ the Yangtze River Route, 938.8 miles, would make a total of 1,555.3 miles from Chêngtu to Shanghai by an all-rail route, using the Szechuan-Hankow Line and the other lines above mentioned.

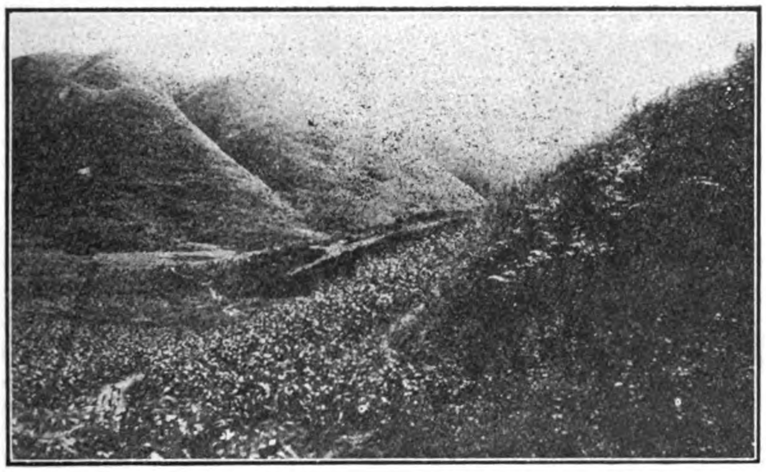
If, on the other hand, the distance from Chêngtu to Sinyangchow viâ our 1 per cent. Line (which is 4.6 miles longer than our 1.8 per cent.) be combined with the distance from Sinyangchow to Shanghai viâ the proposed Pukow-Sinyangchow Line and the present operated Shanghai-



Tungkiang River near Hangkou, Mile 540

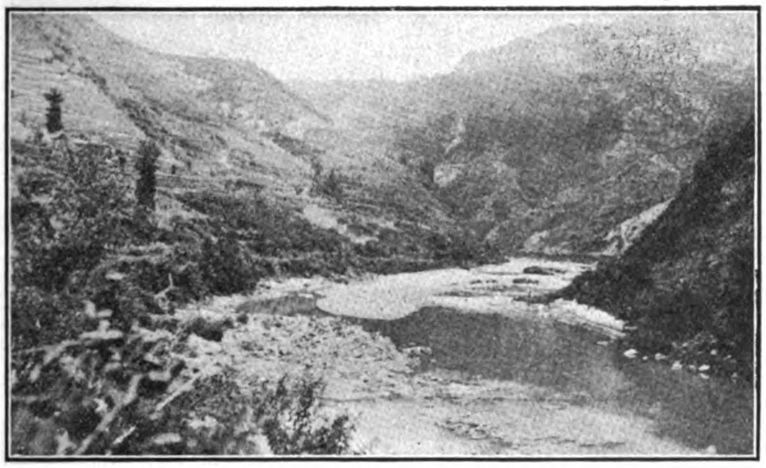


General Character of Country Forty Miles West of Chuhsien, Mile 739



Looking Southwest from Yutupa Summit, Mile 502

Country East of Nanchi



Near Chuyukuan, Mile 531

Looking Southwest from Divide Toward Chengkou

Views in the Mountains through which a Railroad can be built on the Han River Route

Nanking Railway, the total distance from Chêngtu to Shanghai will be 1,380.0 miles. The following table summarizes these figures in convenient form for reference :—

TABLE OF DISTANCES.

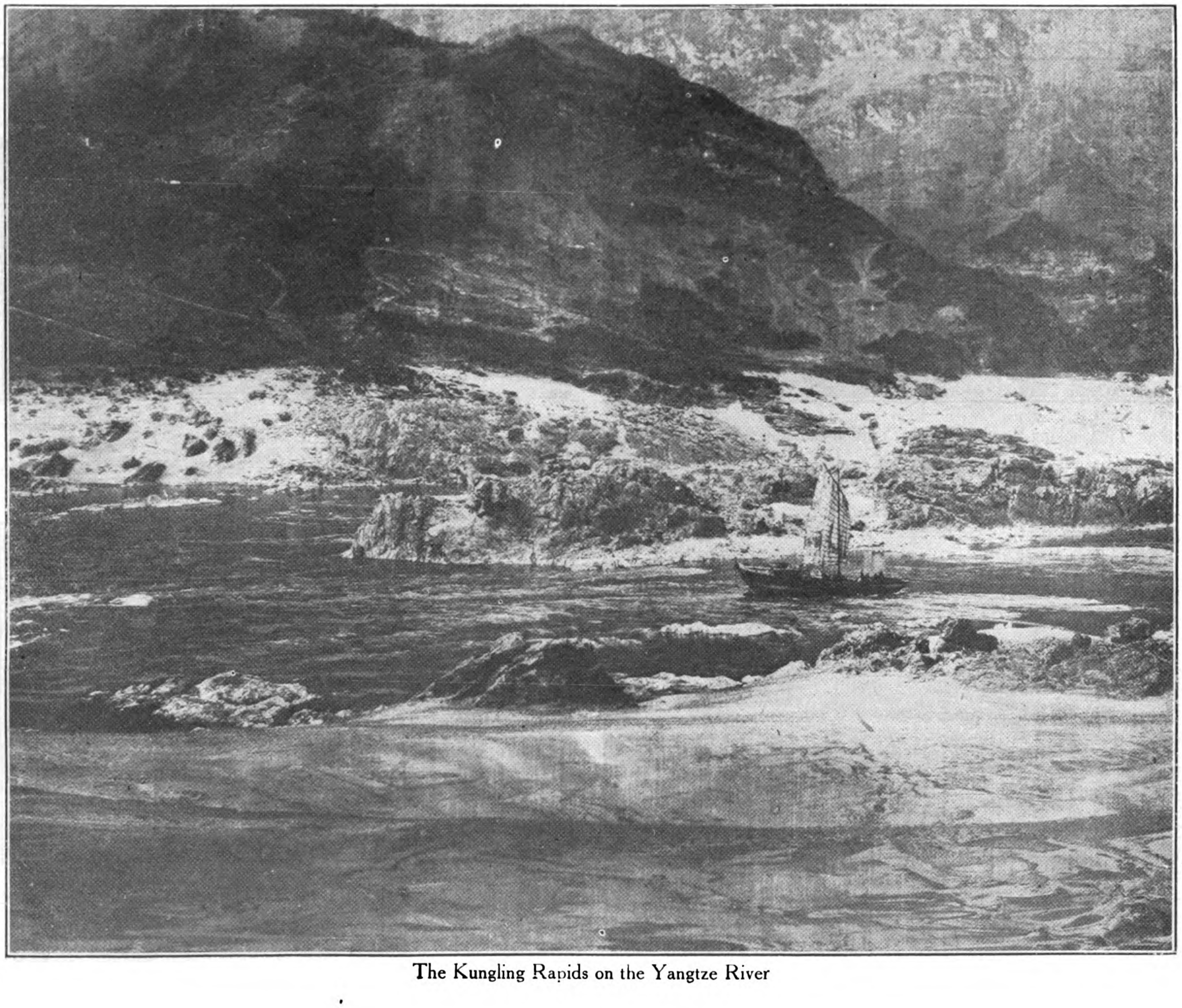
From	To	Via	Miles	Total Miles
Chengtu	Hankow	Szechuan-Hankow Line	938.8	
Hankow	Shanghai	Yangtze River	595.0	
Chengtu to Hankow via above *River* Route				1,533.8
Hankow	Shanghai	Peking-Hankow, Pusin & Shanghai-Nanking Rys.	616.5	
Chengtu to Hankow via above *Rail* Route				1,555.8
Chengtu	Singyangchow	Han River Route	895.5	
Singyangchow	Shanghai	Pusin & Shanghai-Nanking Railways	484.5	
Chengtu to Shanghai via above Route				1,380.0

The foregoing table indicates that the distance from Shanghai to Chêngtu viâ the Han River Route is 153 miles shorter than the Yangtze River Route, taking the shortest route from Hankow to Shanghai (the Yangtze River), to combine with the Szechuan-Hankow Line; if we take the all-rail route, the Han River Line would be 175 miles shorter. It, therefore, follows that the Han River Route would afford the most direct connection with Shanghai and the seaboard.

One of the most important features which should be given consideration in making this comparison of routes is the adaptability of the route to best serve the needs of the country—which route is best adapted, both from the financial standpoint and from the standpoint of national needs of China to best serve the territory designed to be served. The accompanying map of a portion of China shows the relative location of the two routes and their connections.

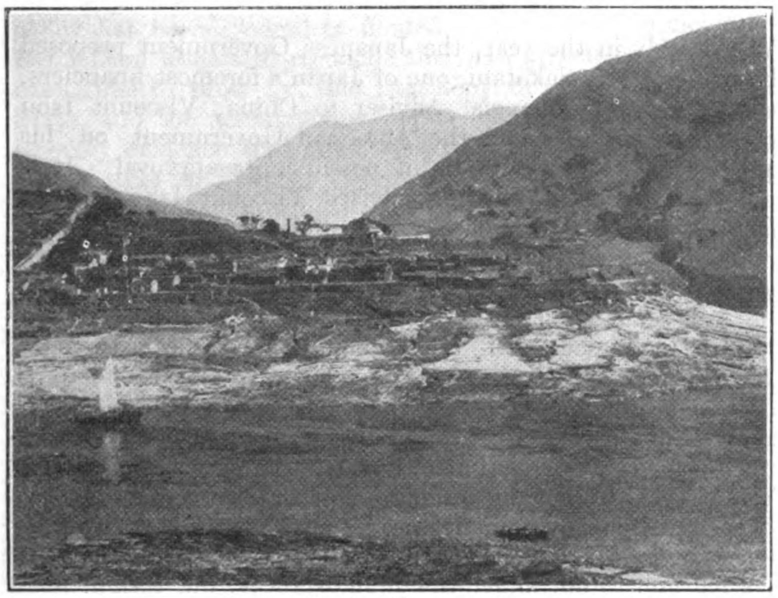
The Yangtze River Route is without doubt a very important line and one which China needs and should have for strategic and political reasons as well as for superseding or supplementing that great carrier, the Yangtze River, in transporting the enormous tonnage of Szechuan products and making the same available for the other Provinces of China and for the outside world.

The Han River Route, however, would serve the Province of Szechuan equally as well, if not better, and at the same time would provide a direct rail route (in conjunction with the proposed Pukow-Sinyangchow Line and the existing Shanghai-Nanking Railway) to Shanghai, the best ocean terminal in China and the largest receiving and distributing point in the Orient. The Yangtze River will always be a great artery of trade and will continue to carry a portion of the commerce of the country it traverses even



The Kungling Rapids on the Yangtze River

after the proposed Szechuan-Hankow Line has been constructed. On the other hand, the Han River Line will form a large part of a most important main East-and-West trunk line through the very heart of China in which there is at present no means of transportation.



A town in the Yangtze Gorges

Furthermore, according to all the data thus far furnished, and as indicated in the foregoing tabulated comparison of the two routes, the cost of construction of the Han River Route will be less and as the distance would also be less the transportation service which this line would render should be more prompt and more economical.

And considered in conjunction with the proposed Pukow-Sinyangchow Line—and it must be so considered in the larger aspects of the case—the Han River Line will render greater service to a greater population and a larger area of country than the Yangtze River Line The Han River Route, therefore, seems better adapted to serve this territory both from the standpoint of national needs and from the financial standpoint.

The Han River Line is also of the greatest strategic value to the Republic of China and would prove a most valuable military asset to the Government in time of the nation's need.

From the political viewpoint this proposed line would provide a means of business and social intercourse between one hundred million people of the interior, who now have no means of intercourse with the people of the other provinces and the outside world; this would result in the development of a spirit of nationalism and a desire for greater national unity, the value of which to the Government and to the country would be incalculable in directing the affairs of the nation, and would prove a bulwark of strength to the Central Government in resisting any aggression from a foreign power. This spirit would be reflected in a keener interest in political matters, in better conditions of government and in greater progress along all lines of national advancement.

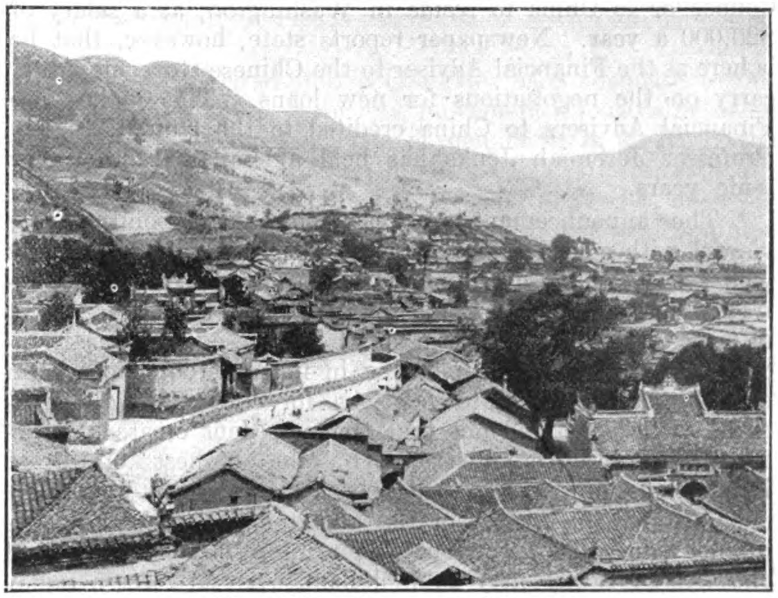
From the viewpoint of national economics—the development of material resources and the production and distribution of wealth—this proposed railway would be the great link in the chain of transportation, which will bind the East and West of China together, and which will make available the enormous natural resources of Szechuan and other tributary provinces, and will also make possible the import into these territories of large quantities of manufactured articles, machinery, and supplies of various kinds, of which these provinces are in need. The proposed railway would stimulate and build up a great commerce which would greatly enrich not only the provinces it would serve directly but indirectly the whole nation. Without an outlet such as railway facilities would afford the wonderful agricultural, mineral and other natural resources of Szechuan have remained locked up for centuries.

In the fall of 1917 when the supply of wheat was short all over the world, wheat sold for $2.50 to $3.00 per bushel in Shanghai, while at the same time in Szechuan it sold for 10 cents per bushel. Large quantities of wheat, and other grains, could have been exported if only the means of transportation had been available.

During the year 1916, there were *imported into China cereals* to the value of over $48,000,000; yet China is an agricultural country and Szechuan is said to be one of the most productive, most intensively farmed agricultural sections in the world. Its agricultural products alone for the year 1914 amounted to over 16,000,000 tons valued at $1,177,364,136.

Or, if we take coal for example; during the year 1914 China purchased from Japan more than 1,650,000 tons of coal valued at over $11,850,000, of which Hankow and Shanghai consumed about one and one-quarter million tons --while all this coal, and more, could have been furnished by Szechuan if only transportation facilities had been available so that the vast coal deposits of that province could have been developed and worked and the coal shipped to the other provinces in urgent need of it.

Taking into consideration all these conditions, the Han River Line is beyond the shadow of a doubt one of the most important railways proposed for this country.



City of Yungchow on the Yangtze

From the standpoint of the financiers, the construction of this line would involve the expenditure of a large sum of money, but the density and wealth of the population and the great resources of the country to be served would seem amply to justify this expenditure and would warrant the opinion that the line would pay. Furthermore, this line would have practically no competition, a feature which would tend to larger revenues.

Properly constructed and equipped and properly managed and developed it should prove a sound, lucrative investment, profitable alike to the Chinese Government and to the financiers.

Democratic Dollar Diplomacy

By George Bronson Rea

FOR the first time in New York's financial history subscriptions have been invited to a Chinese Government loan by public advertisement. From the many interviews published with interested parties, it would appear that the loan issue is the opening shot in a new campaign to test the strength of American friendship for China. The present loan, however, seems to be a forced issue; a new loan to pay off an old one coming due at this time, and to provide for the interest. It is a refunding loan of $5,500,000 issued by the Continental and Commercial Bank of Chicago to take up the original treasury notes of $5,000,000 issued two years ago, which China, in her present state of financial chaos, is unable to meet.

Naturally, all sorts of absurd stories are being circulated in the newspapers connecting this transaction with the proposed new Consortium, which, it is said, has given permission to float this loan to meet China's pressing requirements, pending the time when it will take over all future transactions. This little flurry in the financial market has also brought with it references to other and greater requirements for China and provided the opportunity for the new Financial Adviser to the Chinese Government to declare that at least $200,000,000 will be needed to disband the Chinese army and reorganize the government.

When ex-Minister Reinsch arrived in this country a few weeks ago, the information preceded him that he had been officially gazetted by the Peking Government as Special Counsellor to China to reside in Washington, at a salary of $20,000 a year. Newspaper reports state, however, that he is here as the Financial Adviser to the Chinese Government, to carry on the negotiations for new loans. This makes two Financial Advisers to China credited to the United States. Professor Jeremiah Jenks has held a similar position for some years.

The announcement of Dr. Reinsch's appointment is viewed with considerable interest by high Republican leaders who are carefully scrutinizing the activities of the Administration in the Far East, during the past four years. Well informed statesmen profess to see in these activities a recrudescence of Dollar Diplomacy in its most obnoxious form and a tendency to create fat, jobs for "Deserving Democrats." it is pointed out that the precedent created by ex-Minister Reinsch is subversive of the highest ethics of international diplomacy, and if other American diplomats should enter the service of the governments they are accredited to, in order to advance their interests at Washington, the United States may as well hand over its foreign policy to other nations and retire from business.

It is also pointed out that if the retiring Japanese Minister to Mexico should accept the post of special counsellor to the Mexican Government in Tokio, in order to agitate against the United States or interest Japanese capital to subscribe to Mexican loans, public opinion in this country would consider it as a piece of intolerable impertinence. In the opinion of those best qualified to judge, the retiring American Minister to Peking has created a precedent that may, in the future, cause considerable embarrassment to this country, especially in the event of any serious crisis in our relations with Japan. This uneasiness arises from the uncontradicted reports surrounding the forced resignation of Viscount Ishii, the last Japanese Ambassador to Washington, When, early in the year, the Japanese Government proposed the name of Mr. Sakatani, one of Japan's foremost financiers, for the post of Financial Adviser to China, Viscount Ishii was instructed to sound the American Government on his appointment, and to obtain, if possible, its approval. It is said that Secretary Lansing advised Viscount Ishii that he had no objection to the selection, and the latter thereupon so informed his Government, and the appointment was announced. This was followed by the immediate objection of the American Minister at Peking, who advised Washington that its acquiescence in the appointment of a Japanese to this important post, would be interpreted as another acknowledgement of Japan's predominant position in China. Viscount Ishii was placed in the embarrassing position of having misinformed his Government, and, when he failed to get from Secretary Lansing an admission that he was authorized to send to his government the assurance that there was no objection to Mr. Sakatani's appointment, there was nothing left for him to do, under the circumstances, but resign.

When, some months later, Minister Reinsch accepts the post of Financial or General Adviser to the Chinese Government to reside in the United States, the incident gives rise to the legitimate suspicion that his opposition to Mr. Sakatani was based, not so much on any altruistic regard for China's interest, as to further his own personal ambitions. This suspicion is heightened by the fact that when Minister Reinsch opposed the appointment of Mr. Sakatani he was actively engaged in forcing upon the Chinese the idea of a new Consortium, which, from all appearances, was devised by himself in opposition to the principles laid down by President Wilson in 1913.

It is also recalled that Viscount Ishii was the second representative of a great foreign Power who lost his post by reason of Minister Reinsch's activities. In the spring of 1917, two weeks after we had entered the war, M. Conti, the French Minister at Peking, protested against the railway contract in the province of Kwangsi held by an American corporation, basing his action on a secret agreement entered into with the Chinese Government in September, 1914, which gave French capital a monopoly of railway construction in that province. Minister Reinsch, without stating the full case, severely criticized the French Minister's move as a violation of the Open Door principle. This communication was sent by the Secretary of State to the French Foreign Office without comment, and to avoid a controversy with the United States at the moment of our entering the war, Minister Ribot simply transferred M. Conti to Copenhagan. Everybody connected with French enterprise in China were deeply resentful of this treatment of an old and tried official, who, they declared, was simply performing his duty in safeguarding French interests.

It is also recalled that during the presidential campaign of 1916, when it looked as though the Democratic party would be defeated, stories were freely published in the Chinese press, that, in the event of a Republican victory, Minister Reinsch would resign to accept the post of General Adviser to the Chinese Government. The story has since been emphasized by the declaration of one of the highest officials attached to ex-President Li Yuan-hung, that the American Minister at Peking wrote a personal letter to President Li at that time, soliciting the position.

The whole Chinese situation has been seriously complicated by the inexplicable conflict of ideals and policies as revealed by the attitude of the State Department and the activities of our Minister to Peking. Time and again during the past four years, the administration has laid down wise policies for the guidance of our Far Eastern affairs, and each time this policy has been ignored or flouted. It has been difficult for Republican leaders to reconcile the high principles announced from time to time by the President or the Secretary of State, and the actual policy pursued on the ground. There is every evidence that there was one policy in Washington and another in Peking, a case of the tail wagging the dog, without the dog knowing it was being wagged.

It is recalled that President Wilson withdrew official support to the American Group in 1913 in the matter of the Reorganization Loan, because he considered our participation at that time as highly inimical to the sovereign rights of China and subversive of basic American principles. There never has been any public disavowal of these ideals, yet the administration is now fathering the organization of a new and more powerful financial consortium, in direct violation of the principles so widely advertised in 1913. Friends of the President who realize how tenaciously he clings to these basic principles of right and justice, are convinced that he has never been consulted in the matter of the new consortium, for, if he had, he would have the courage to make public the reasons for his surrender of former principles. That no announcement has come from the White House in explanation of this reversal of policy, gives rise to the belief, that the President has not been consulted.

It is generally conceded that the President was right in 1913, for although his stand against the American Group operated against the profitable investment of American capital in China, he was fully justified from the viewpoint of those higher ideals which lie at the foundation of our institutions. The first Reorganization Loan to the so-called republican government of Yuan Shih-kai, was the direct cause of the failure of democratic or representative government in that country. It fastened upon China the rule of the military bandits who have since sucked her life blood dry. The funds have built up a huge military autocracy, throttled the nascent germ of Democracy, and sent into political exile those brilliant republican leaders who overthrew the worm-eaten Manchu dynasty.

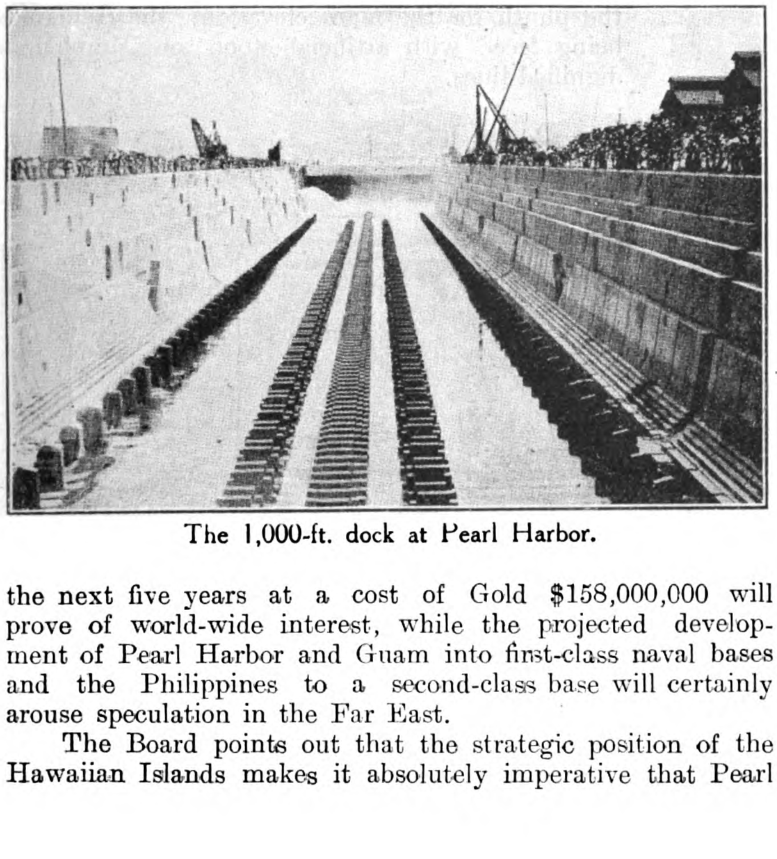
For the sole benefit of international finance to obtain loan, railway and industrial contracts from a centralized power, without having to experience the delays arising from a parliamentary government, the fiction of a Chinese Republic led by unscrupulous military satraps, has been upheld by the Powers for the past seven years. Many of the deals entered into with this group of grafters will never stand the scrutiny of an honest parliament. An honest Chinese government sounds the death knell to the execution of these schemes. Therefore, the corrupt, incompetent old gang must be maintained in power.

After seven years of misrule, graft, sedition, tyranny and internecine strife, it is now proposed that the great American Democracy shall, through its savings, cement the hold of the military bandits upon a long suffering people, and destroy for another generation the success of representative government. For this is what the proposed new Loans to China mean at this time. No wonder, President Wilson has refrained from making public the reasons for his reversal of principles, and that not a word has escaped from the administration before the spectacle of the ex-American Minister arriving in this country as the salaried agent of the Peking

(Continued on page 14)

Pearl Harbor to be a First Class Base

The recommendations made by the United States Special Naval Board, headed by Admiral J. Mekean, for the development of the Pacific Coast Naval Shore establishment during

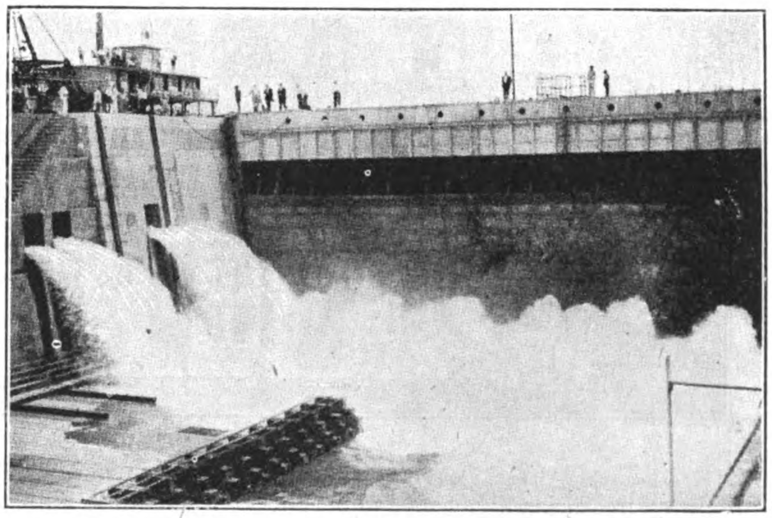


The 1,000-ft. dock at Pearl Harbor.

the next five years at a cost of Gold $158,000,000 will prove of world-wide interest, while the projected development of Pearl Harbor and Guam into first-class naval bases and the Philippines to a second-class base will certainly arouse speculation in the Far East.

The Board points out that the strategic position of the Hawaiian Islands makes it absolutely imperative that Pearl Harbor be converted into a first-class base adequate to take care of the whole fleet in any movement offensive or defensive, across the Pacific. The developments of Pearl Harbor are, according to a telegram published in the East, estimated to cost $27,000,000, including an additional dry dock, increase of storage space, expansion of repair and maintenance equipment and a complete submarine base.

The present naval dock at Pearl Harbor is 1,000-ft. in length and was built by the Hawaiian Dredging Co. It was dedicated to use by Secretary of the Navy Daniels in August, 1919, the Secretary visiting the islands on the superdreadnought *New York*.



Filling the big dock at Pearl Harbor.

DEMOCRATIC DOLLAR DIPLOMACY—*contd. from page 13*

militarists to assist in raising the great loan of $200,000,000 to perpetrate this crime against liberal or parliamentary government.

It is difficult for honest Americans, and especially the Republican leaders who were scathingly denounced by the Democrats for their so-called Dollar Diplomacy, to understand the reasons for this alliance between the Democratic administration and international finance, especially when the initiative comes, not from American bankers, but from the State Department acting upon the advice of the American Minister to China. Under previous administrations a certain amount of governmental support and encouragement was extended to our capital for legitimate investment in foreign countries, but open encouragement was never given to any financial combination whose loans might be employed to throttle the growth of Republican ideals in other lands.

President Wilson was quick to see the menace to the administrative independence of China in 1913, and thereby gained the gratitude and confidence of the Southern leaders, who willingly sacrificed their opportunity to place themselves in the most powerful financial position in China, in order to advance their ideals. The radical departure of the administration in forcing the organization of a new consortium may benefit American bankers for a year or so, but it is hardly possible that this new trend of Dollar Diplomacy will meet with the sanction of a Republican President.

New York, Nov. 7, 1919.

An association of Chinese and American Engineers was recently formed at Peking, Mr. K. Y. Kwang being elected President; Mr. Murray Sullivan, Vice-President; Mr. Yang, Secretary, and Mr. Thomas Sze, Technical Expert in the Ministry of Communications, Treasurer. At the inaugural meeting over forty engineers signed the constitution. Numerous Chinese educated in engineering in America now hold important positions in China, and there are many American engineers in the country. Mr. Kwang, the President of the new society, constructed the railway from Kalgan to Fengchen as Chief Engineer, and later became Engineer-in-chief of the Northern section of the Tientsin-Pukow Railway. Mr. Kwang is one of the most thorough engineers in China. Mr. "Strong" Yen, the Managing-Director of the Canton-Hankow railway, is another Chinese engineer with a fine record and experience, while Mr. T. C. Sun, Managing Director of the Projected Chuchow-Chinchow railway, is of like calibre and was responsible for the building of the Kirin line. There are many other Chinese engineers who are a credit to the profession and certain to make names in the future development of China.

New Concrete Post Office Building at Nanking

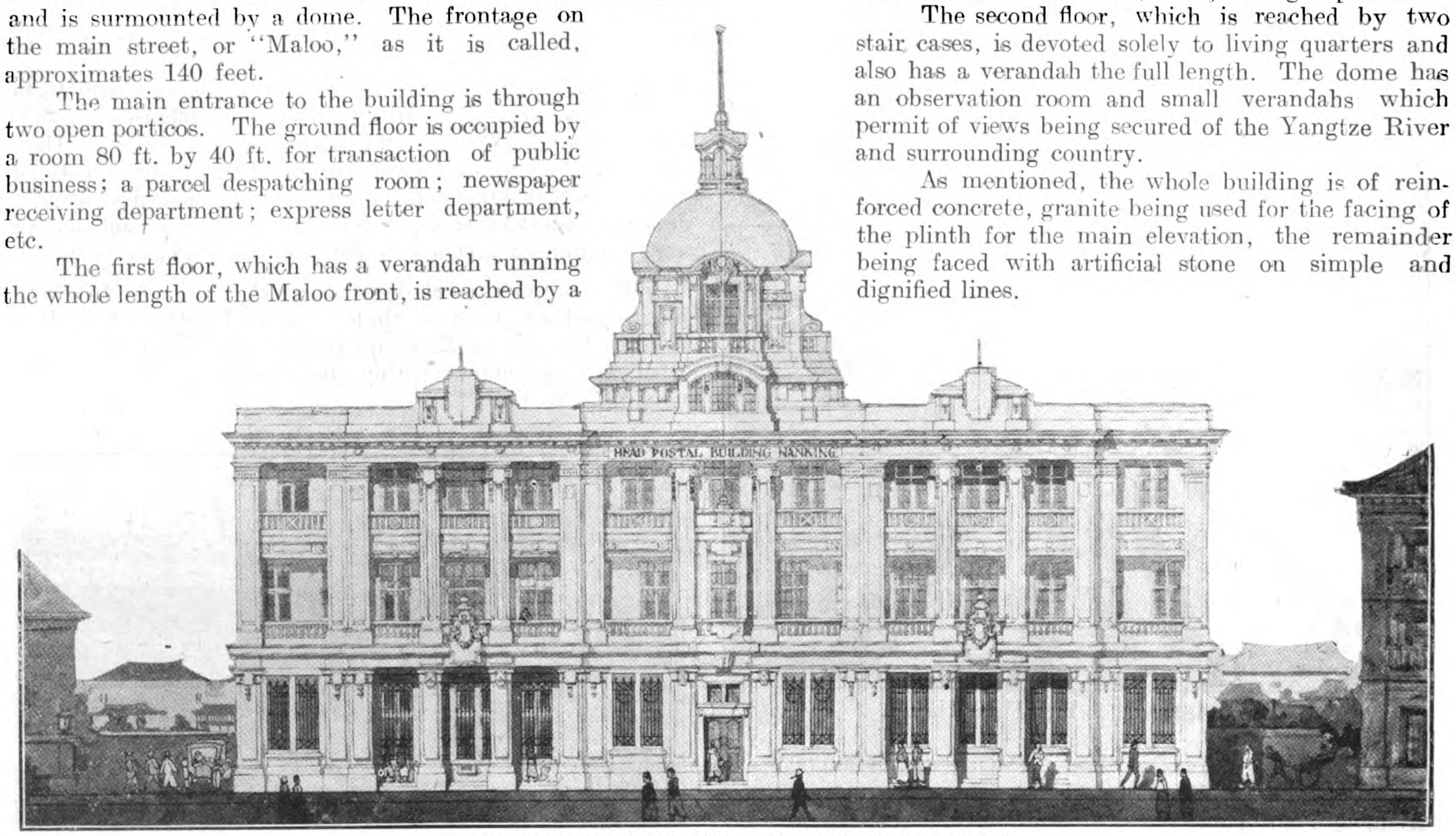
The new Post Office building now being constructed at Siakwan, Nanking, adjoining the police station, is being carried out in reinforced concrete, and is, in design, a modern treatment of the Ionic order. It is of three floors and is surmounted by a dome. The frontage on the main street, or "Maloo," as it is called, approximates 140 feet.

The main entrance to the building is through two open porticos. The ground floor is occupied by a room 80 ft. by 40 ft. for transaction of public business; a parcel despatching room; newspaper receiving department; express letter department, etc.

The first floor, which has a verandah running the whole length of the Maloo front, is reached by a main staircase leading to a large hall, while a small staircase gives access to the subsidiary offices. The main offices are those for the Postal Commissioner and the Deputy Postal Commissioner, which open on to the verandah, and offices for the clerical staff. In the rear are situated the offices for general accounts, district accounts, inland control, inspectors' department, examination room, and printing supervisor.

The second floor, which is reached by two stair cases, is devoted solely to living quarters and also has a verandah the full length. The dome has an observation room and small verandahs which permit of views being secured of the Yangtze River and surrounding country.

As mentioned, the whole building is of reinforced concrete, granite being used for the facing of the plinth for the main elevation, the remainder being faced with artificial stone on simple and dignified lines.



FRONT ELEVATION OF THE NEW POSTAL BUILDING AT NANKING

The building is warmed by a central heating plant, and is equipped with electric light. The architects are Messrs. Palmer and Turner, of Shanghai.

Big Port Project for North China

Involves the Creation of an Ice Free Port and City, with Dock, Railway and Canal Services to Develop Chihli Province and North China

ONE of the most important projects in connection with the development of deep-sea ports in China was launched in December when the Chihli Provincial Assembly gave its approval to a scheme known as "The Chihli Development Plan" matured by the Chinese gentry of Chihli for the construction of a modern port on the Gulf of Pechihli, about twelve miles from Chuichinghokou, an old port not far southeast of Tangshan, on the Peking-Mukden railway. The project involves as preliminaries

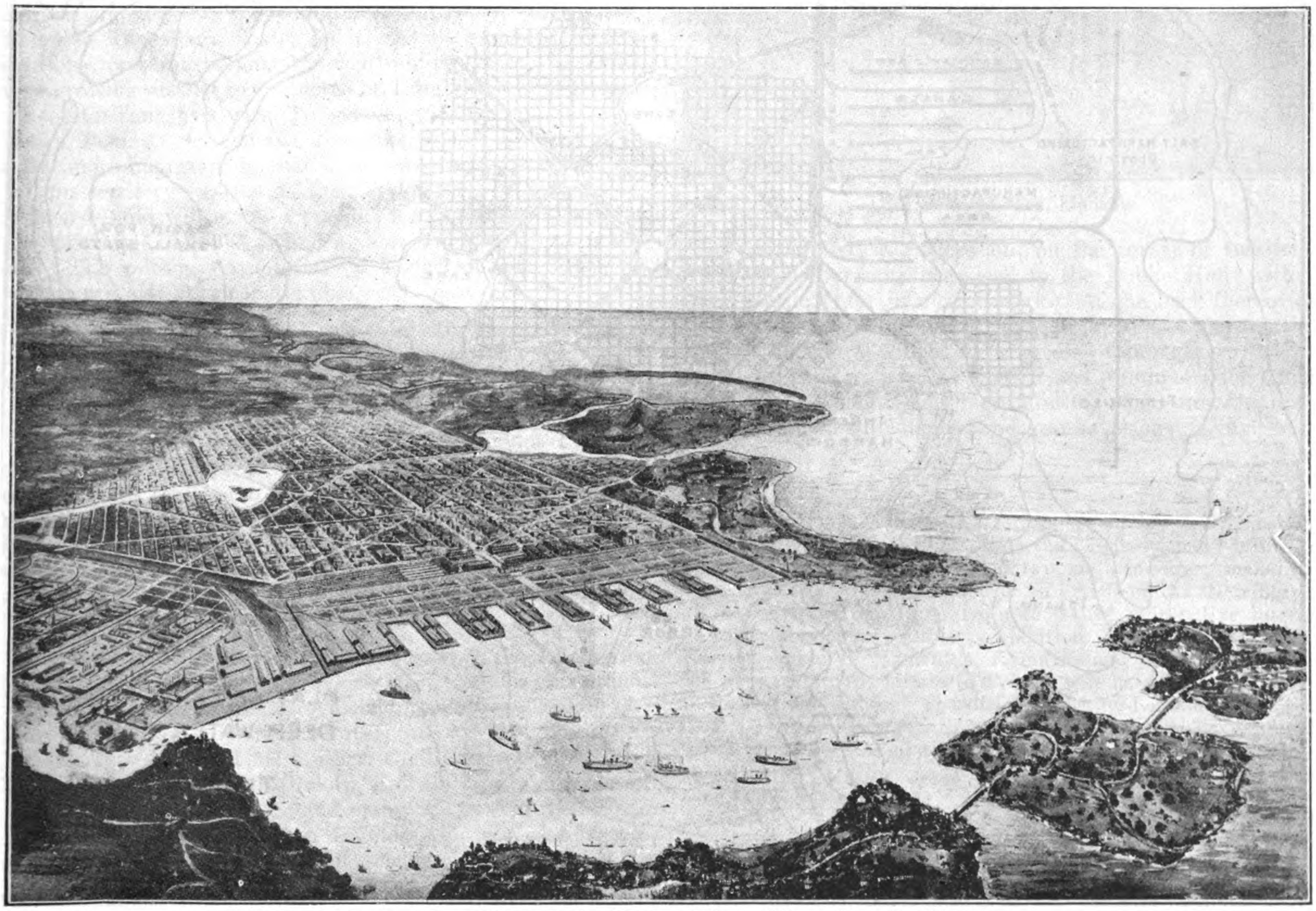
The building of a modern port and the necessary facilities;

The construction of a railway from the port to some point on the Peking-Mukden railway to give access to Tientsin; and

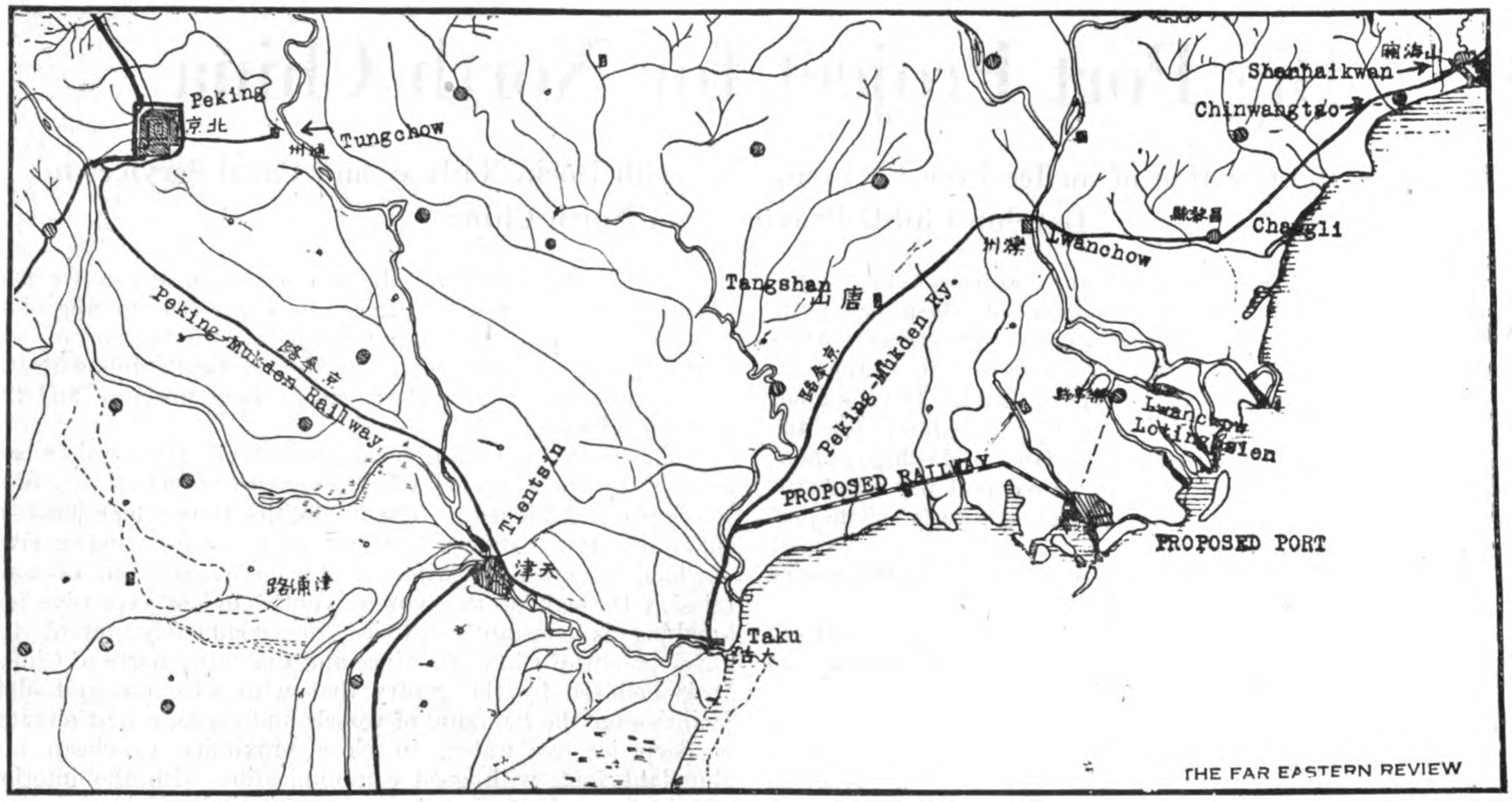
The excavation of a canal viâ Tangshan to Tientsin.

The port selected by the Chinese promoters of the scheme is that which was named by Dr. Sun Yat-sen in his program for the International Development of China, which was published in the FAR EASTERN REVIEW of June, 1919. In that scheme Dr. Sun emphasized the necessity for the construction of a deep water and ice free harbor as a "Great Northern Port," and while he has not taken any active part in developing the present project he expressed to the FAR EASTERN REVIEW great appreciation of the action of the Chihli gentry in so promptly and energetically following up his suggestions for the betterment of their province and the relief of Tientsin.

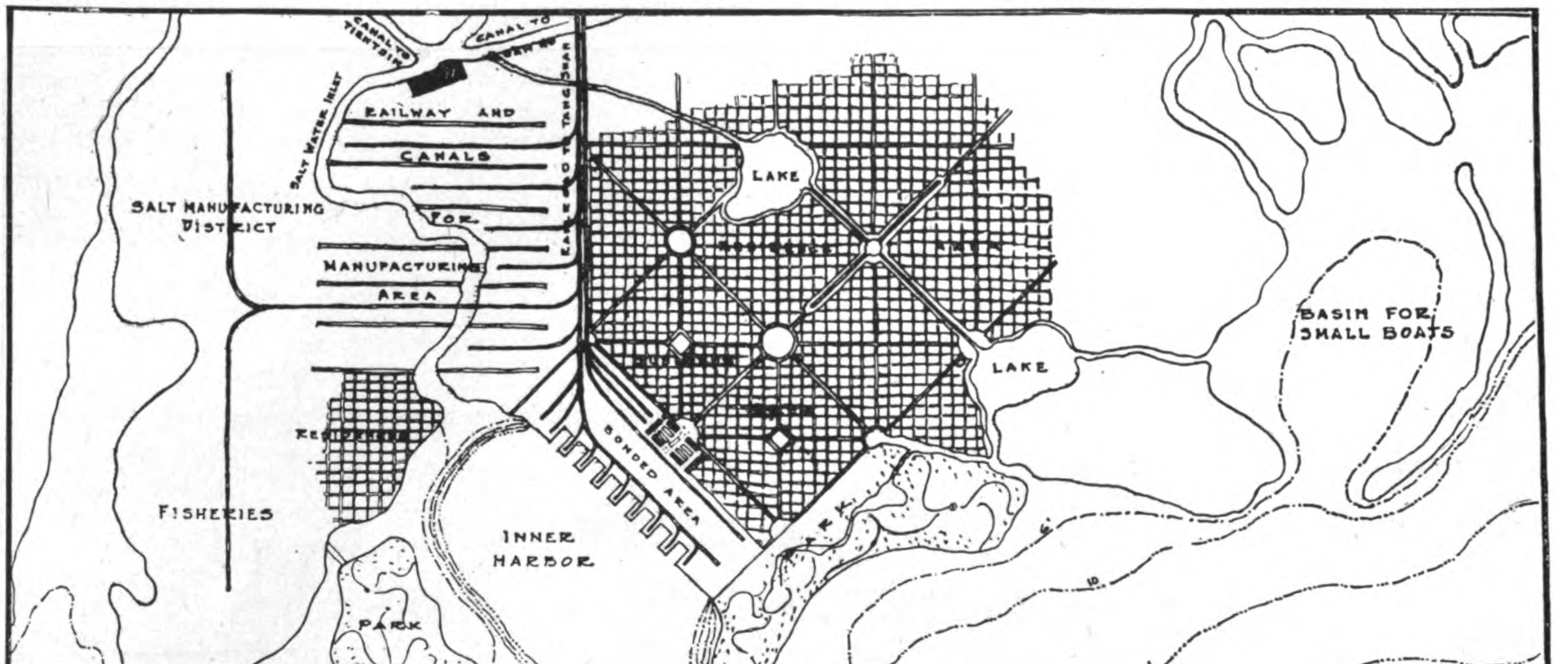
The gentry of Chihli who are behind the project are inspired by the necessity which exists to provide a new deep water port for Tientsin. The disabilities from which Tientsin suffers by its situation a long way up a narrow winding river —which is frozen in winter and consequently out of commission throughout the winter months unless expensive ice-breaking is constantly carried on—completely retard the development of Chihli Province and the entire north of China. It is believed by the gentry that with adequate up-to-date facilities for the handling of vessels and cargo, a port situated on deep, ice free water, in close proximity to cheap and abundant fuel, with good communication with the interior, will in very short time become a big industrial as well as commercial centre as well as fill a need which the whole north of China is gasping for. At present Tientsin is accessible only to light draft vessels. Deep sea steamers have to



An Aeroplane View of the Projected Deep Water Port for Tientsin



Map showing the position of the Projected Port and its relation to Tientsin.



anchor miles out from the shore and in bad weather the handling of cargo is impossible. In addition the floods which isolated Tientsin a few years ago, the silt which is a constant trial and tribulation to those endeavoring to keep the port open, contribute to make a port capable of handling deep sea vessels a necessity for the preservation of Tientsin as a market. The vested interests of Tientsin are too great to be sacrificed, and the promotors of the new port project feel that their proposal if carried out will solve Tientsin's difficulties and open the way for the proper development of the whole of North China, which development will be assisted in the future both by Chinwangtao and Hulutao, when the latter port is completed.

The site selected for the new port is roughly indicated on the sketches reproduced herewith. The inlet is sheltered on two sides by a peninsula and by three small islands, and it is claimed that an excellent all the year around harbor can be constructed by building a breakwater in such a fashion as to let the prevailing winter winds blow out the ice that may form within.

According to the present plans extensive docking and landing facilities are to be provided for the new port, which will also be well equipped with godowns, coal-sheds and all other buildings required for a large shipping centre.

A concession of 100 square miles will be set aside for the port, and within it, in addition to the above, there will be constructed a summer resort, factories and mills.

As these industrial plans develop it is expected that the new port will grow into one of the large cities of Chihli Province.

The railway to connect the port with the rest of the province enjoying railway communication may, of course, run up to Tangshan. Later on it may be extended in two directions, one line tapping the rich mining, agricultural and cattle-growing district to the north of Tangshan and the other connecting Tangshan with Tungchow, thirteen miles to the East of Peking. Of the two lines the former is thought to be the more important in that it traverses what is practically a virgin territory—as far as the development of industry is concerned—and will make it possible for the grain, skins and hides of Chihli Province to find a short and easy route to the sea. The mining possibilities of Tangshan and adjoining districts are also very considerable.

The projected canal will run from the new port viâ Tangshan to Tientsin, where it will connect with the Grand Canal and thus open up another water route from some of North China's richest territory to the sea.

The estimated cost of the Chihli Development Plan involves an expenditure of from $37,000,000 to $40,000,000, and the funds that are to be advanced for it are to be secured against Chihli Provincial Treasury Bonds. In well informed circles it is not, however, thought that the present estimate will come anywhere near to covering the cost of a big port, two railways of considerable length and a canal from Chuichinghokou to Tientsin.

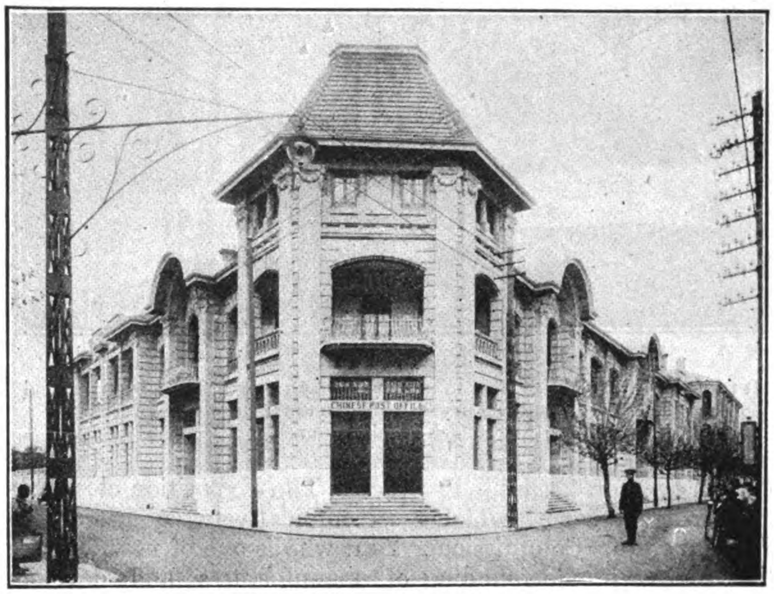
Among the Chinese who are interested in the scheme for the development of Chihli Province are Chow Tze-chi; Pien, Chairman of the Chihli Provincial Assembly; Tuchun Li Hsun and his confidential representative Wen Shih-tsen; Tuchun Tsao Kun and his brother, Civil Governor Tsao Jui; Mr. Hsu, of the Tientsin-Pukow Railway and a brother of President Hsu Shih-ch'ang; and many others. On the foreign side is Mr. Harry Hussey, an architect who was closely connected with the architectural and construction work at Peking of the Rockefeller Foundation and who is representing the foreign interests.

Regulations in connection with the project are being drawn up and will be submitted to the Ministry of Commerce, Agriculture and Industry at Peking for approval and registration.

It is expected that the agreement of the Government will be secured, especially as the project has already been passed by the Chihli Provincial Assembly.

Chinese Post Office at Hankow

This building was erected for the Chinese Postal Administration in thirteen months by a local Contractor, Chee Mei Kee, at a cost of Tls. 75,000, and was opened on Chinese new year day 1917. With exception of a few materials the Chinese market cannot supply, it will stand as a feature of Chinese labor and industry, the furnitures throughout, which are of oak, have been made also locally. It is one block from The



District Post Office, Hankow

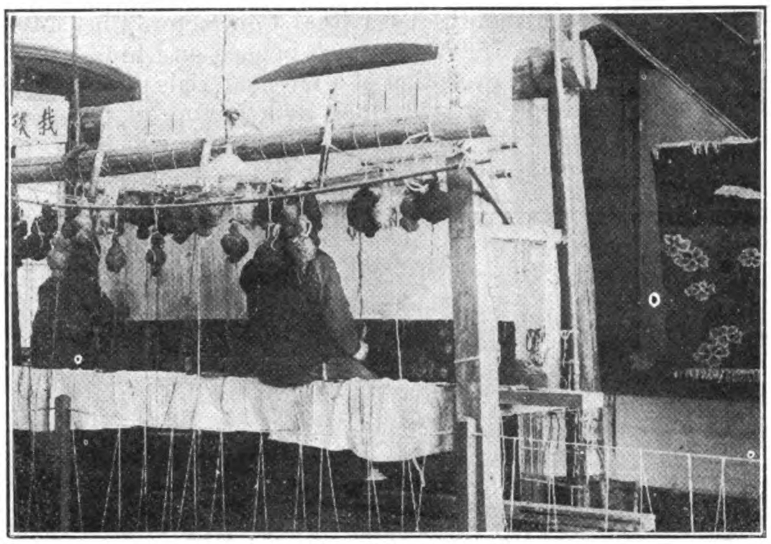
Bund in the British Concession, on the corner of two roads from which four entrances lead to the Public Hall with a 170ft. long counter in mosaic work. At the back thereof are grouped the various offices of the Mail and Parcel department, round a big yard, which, by a covered thoroughfare, is connected with the road. The District and Administration Offices are all on first floor. The high plinth is of granite, the upper walls in brick with concrete and granite plaster facing.

The enormous possibilities for the profitable development of hydro-electricity in China and the unquestioned future of electrical railways in the mountainous provinces, makes the remarks of Mr. August Karisen in an article on the electrification of the railway from Cape Town to Cairo, of peculiar interest. In discussing the possible competition of the aeroplane Mr. Karisen says: By Edmonton, Klondyke and the Behring Straits the distance from Chicago to Peking will be 8,000 miles, accomplished in seven days. The distance Peking-London through the Gobi Desert to Irkutsk will be 6,100 miles, in five days, and the whole circumference of the northern hemisphere of the earth of 18,300 miles will be made in 17 days, or less than the pre-war time from Johannesburg to London. The electric railway allows a safe speed of 50 miles per hour, even in the heavy gradients, and it is this electrification which makes rapid railway transit possible, provided, of course, that rails and bridges are made for the heavy locomotives required. We shall thus beat the aeroplane, because with passengers the aeroplane cannot travel by night.

Chihli's First Industrial Exposition

By Upton Close

ONE of the most progressive measures ever taken in the encouragement of industries, ancient and modern, imported and native, in the northern part of China, was the carrying out of the Chihli Industrial Exposition by Commissioner of Industries Yen Chih-I under the auspices of Tsao Jui,



Rug-Weaving

It takes about 150 days of labor to turn out a 9 by 12 rug. The foreign demand for Tientsin rugs was never so great, and the price was never so high as this winter.

Civil Governor of Chihli Province. The Exposition closed its twenty-day session, which was cumulatively successful, on November 15. Commissioner Yen, who is one of new China's livest wires in the founding of manufactures and development of natural resources, has had the idea up his sleeve ever since his return from the Panama-Pacific Exposition in San Francisco, 1914-15, which he attended as one of the delegates in charge of China's exhibit. Two years ago he became Commissioner of Industries of Chihli Province, and grasped this opportunity to work up his idea of a competitive exhibition of the best products of the entire province, which he believes to be one of the most effective stimulants of progress among producers.

Funds for the project, however, as in the case of most progressive schemes, were difficult to obtain. Failing to secure an appropriation for the purpose, Mr. Yen set to work to save the money necessary from the regular budgets of the provincial Agricultural Experiment Station, the Agricultural School, the Industrial Experiment Station and the Industrial Exhibit Museum, of which four institutions he is, by reason of his office, the head. Last summer, having got together $2,000 he enlisted the support of the Chambers of Commerce, the magistrates of the various counties, and his own assistants in the various Industrial Institutions—who donated the necessary clerical and ushering work—and planned for his opening. On the advice of foreign friends, who assured him that many foreigners would take advantage of the Exposition if it were held after their return from the summer resorts, the date of opening was postponed to October 20.

Two Thousand Entries

Two-thousand entries were gathered, and set up in the two main wings of the Industries Museum building in the Tientsin public park. These entries were of three varieties: Those purchased by each county magistrate at the request of the Commissioner as being most representative of the industries of his local district or bearing some special interest, those donated by manufacturers, and those placed by producers for sale by the Exposition. The former two varieties are to be turned over to the Museum, which contains a permanent exhibition of fisheries, agricultural, outside province and foreign products, for permanent exhibition. The latter, comprising over 900 entries, were tagged and numbered, and sold to visitors on condition of delivery at the close of the Exposition, with no discount charged or profit deducted. The success of the Exposition in disposing of the majority of its sale entries has made it immensely popular with merchants and manufacturers, and this class of entries is certain to be greatly increased in future showings. Through the courtesy of the customs authorities, exhibits from the various districts were allowed to come into Tientsin free of native customs duties.

The object of the Exposition was announced to be: "To advertise the manufactures, hand-industries and art work of every district, and create a competition in excellence of output and progressiveness of methods." A quantity of literature, well got up, was distributed through the native Chambers of Commerce of the province. In the opening speech, following a brief introduction by Governor Tsao Jui, Commissioner Yen emphasized the importance of bringing in improved methods and increasing the standard of the handicraft of China. In America and Europe machine manufacturing occupies the first importance, as labor is scarce and dear, but in China hand-labor will continue to be of the primary importance for many decades. Aside from the fact of the abundance of labor, exists the difficulty of procuring Western-made machinery, the almost entire output of which is likely to be absorbed in post-war reconstruction for a considerable period of time. China is unable to manufacture her own machinery except to a very limited degree, and Japanese machinery-manufacture is still in its infancy. Much experience and study will be required to learn machinery-manufacture in a way which will enable successful competition with other countries; and it will be necessary to introduce this revolutionizing factor in industry gradually, in order to avoid the economic and social disturbances which attended its inception in England and other countries.

Machinery Manufacture and Handicraft

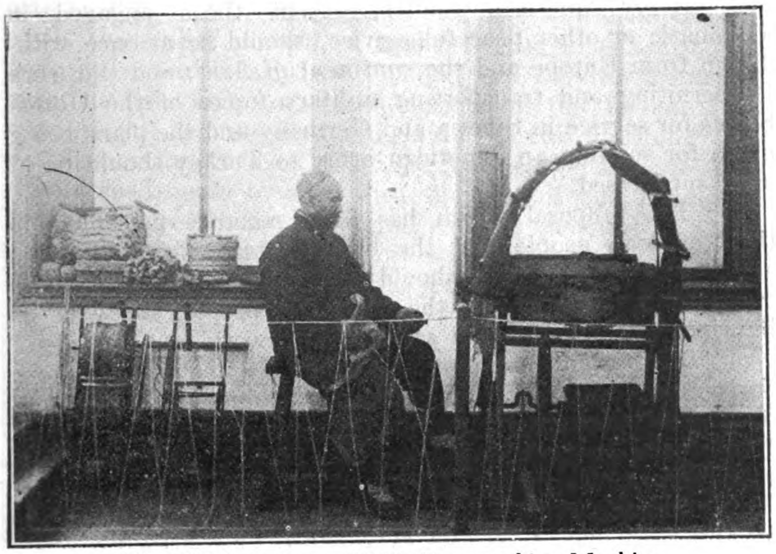
Although machinery-manufacture is to be encouraged in every way as the ultimate goal to work toward, these considerations point to the necessity of stimulating and standardizing handicraft. Some products, as the Tientsin rugs, which took first prize in the Panama-Pacific Exposition, rank among the world's best craftsmanship, while many other products are extremely crude and undeveloped. It is these crafts in which Chihli province cannot be said to compare with foreign countries, or even with South China, which it was especially desired to stimulate.

The Commissioner further set forth the importance of industrial education in improving the condition of the people. It is his aim, he said, to see industrial education a part of the curriculum of every intermediate and middle school. The Exposition, he trusted, would spur to action by competition and the exchange of improved methods and ideas.

Mr. John Wang, founder of Hwa Pei Tannery, followed with a speech explaining the place of Expositions in accomplishing progress, and told what the great industrial expositions in Europe and America had done for industry there.

Actual Process Exhibits

The exhibits were arranged in five departments: (1) The actual making of goods, in a room to itself; (2) Exhibits of manufactured products; (3) Tableaux displays; (4) Miscellaneous entries; and (5) Sale exhibits. The first, where



The Old Inventor and His Rope-making Machine

After eighteen years of labor he perfected this machine for twisting rope, which will do the work of eight men, and brought it to the Exposition to give his invention to the world.

work-" men "—who were over half women—were engaged in the actual process of their various crafts which had been transplanted bodily from their shops to the Exposition, naturally attracted the most interest. Thirteen various crafts and arts were in progress: Saddlery and shoemaking, brushmaking, straw-braid hat manufacture, hosiery-knitting. thread-spinning from cotton, wool and camel hair, towel-knitting, hemp-rope making, rug-making, willow-withe basket work and grass-mat weaving, cloth-weaving, silk-making, and stone sculpture. New methods were demonstrated and ideas interchanged.

A Chinese Inventor

One sturdy old man from the interior was demonstrating a rope-making machine on which he has spent eighteen years labor, and which he claimed could put out as much rope as eight men working by hand. The old chap was confident that he had the very latest thing in rope-weaving that the world has seen. Although his invention will hardly compete with the modern rope-making machines of the West, it is most encouraging that Chinese of the remote interior, who know nothing of modern machinery, should realize the necessity of and feel the impetus to improvement of their ancient methods and implements.

Hair-brush making is an industry new to China, and really owes its existence to the boycott of Japanese goods. Thousands of tons of hog bristles go out annually from Shantung, Chihli and Manchuria to Japan, America and Europe. A large part of Japan's finished product was shipped back to China for sale. Since the boycott, the preparation of the bristles and brush-making has been undertaken in Chefoo, Tientsin, and other places. Rug-making, Tientsin's most famous industry, was well represented. It is estimated that half a million dollars' worth of Tientsin rugs are put out yearly in this one city alone, a large portion of which are exported. Tientsin rugs, although the most important in output, are not, however, the finest in art and texture. The Exhibition contained several Mongolian rugs which set a good model for Chihli and Shantung rug-makers to work to. These Mongolian rugs, however, can hardly be called a commercial product, as they are gradually woven by a family, sometimes requiring several generations of time for completion.

A New Sculpture

One most interesting exhibit was the stone-sculpture, which represents an endeavor to introduce a new school of sculpture into China on a commercial basis. A soft, snow-white marble-like stone is quarried in Chuyanghsien, Chihli, and worked up in the studio in the Italian Concession, Tientsin. Portrait sculptures, imaginative pieces, and groups are executed, many copies of ancient Greek models being attempted. A distinct effort is made to get away from the old Chinese caricatural style, and follow the Western realistic style. The detail and workmanship are good, but the pieces, as might be expected, lack life. That it is popular, is shown by ex-President Li Yuan-hung's purchase of a large group at the Exposition.

The Agricultural, Fisheries and Industrial exhibits which are constantly in the building were thrown in with the Exposition, making a good sized show. The Exposition proper contained finished products manufactured in Chihli province only. Every exhibit was distinctly labeled with the county of its origin, the name of the concern which produced it, and the price of duplicate articles (if it was a sales exhibit).

Tableaux Displays

The tableaux displays were artistically got up. The wool industry was graphically illustrated by a large, mounted fat-tail ram, surrounded by samples of wool in various stages of manufacture, up to the finished products of the knitting mills. Several furniture and home-decorative exhibits were shown in attractively arranged rooms, complete from the rugs on the floor to the paintings on the wall and the incandescent lamps, all of which were local products. Foreign visitors were particularly pleased with a tasty bed-room display, while an office room and a full-room set of wicker-work were almost equally good.

A beautiful exhibit was that of aigret plumes, produced and prepared beyond the Great Wall. The lace-work, needle-work and embroidery contained some specimens which were most tempting to the pocket-book. The porcelain, although inferior to Kiangsi products, was very acceptable and very cheap. Some of the figures cast in clay, and the pottery groups were large, and must have been very difficult to burn.

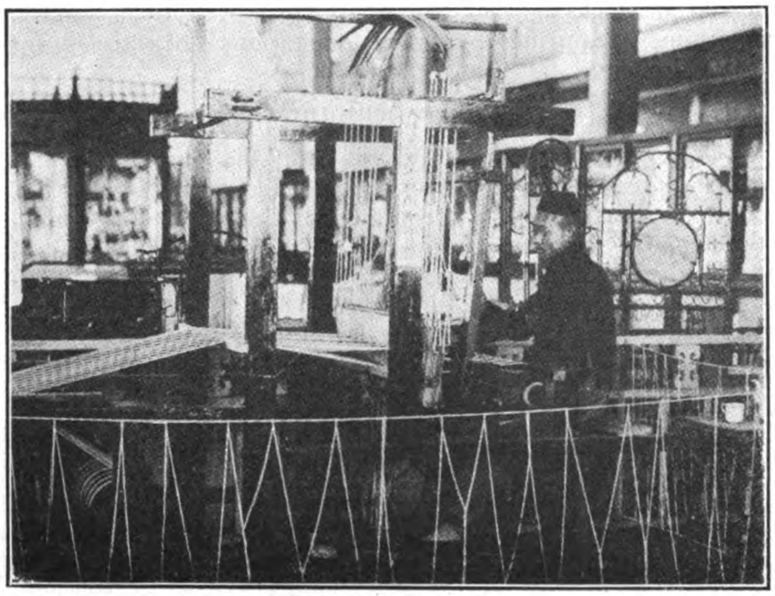
Various Exhibits

A full line of athletic goods and school equipment, from chalk crayons to the big bass drum, were shown. An exhibit put up by a Tientsin hat-manufacturing firm, showed the caps worn by ranking officers from the humble lieutenant to the magnificent plume-crested head-gear of the president of the Republic. The articles of this exhibit were tritely marked, "Not for sale." Food products were represented by native bottled wines, dessicated egg powder, tinned biscuits, and dried native figs and persimmons.

The Tientsin Crucible and Steel Co. showed examples of the various qualities of its output, while cutlery, swords, steel, brass, pewter, and silverware occupied a large section. Excellently made granite-ware and nickel-plated plumbing-fittings were shown, and the Tangshan cement industry occupied a large place with its ornamental tile. Native-made

machinery, of course, was the weak point, being represented solely by two small cotton-gins.

The Exposition was open daily from 9 a.m. to 5 p.m. A bevy of ushers were in attendance, who personally conducted every guest over a fixed route through the entire exhibit. Foreign guests were conducted by English-speaking ushers. Two circles in the centre of the building were set off for rest and tea rooms for visitors. The number of tickets sold reached as high as six-hundred daily. Among the prominent guests were the governor and two ex-presidents, all of whom made purchases.



Chinese Method of Weaving Cloth

An Opportunity for the Foreign Trader

Commissioner Yen's enterprise will doubtless prove of great value in building up native industries, and its success has given rise to plans to conduct it yearly. Although for its first year the Exposition was limited to products of Chihli province, it is hoped that it will develop into an exhibit of and competitive stimulant for the industries of all Northern China. The management would be glad, if warranted by the circumstances, to provide for the display of European and American imports and machinery. If local representatives of European and American manufacturers were to obtain the use of an annex for this purpose, they would attract the interest to their various lines of the thousands of visitors to the Exposition, many of whom are merchants and producers in search of improved products and particularly of machinery and methods which will aid them in improving their own products.

A Return to Pure Americanism

Senator Miles Poindexter smashed all precedents by announcing his candidacy for the Republican nomination for the Presidency in 1920, and laying down the principles of his own platform. After eight years of wobbling, side-stepping and ducking every issue that has arisen, it is a relief to read the statement of the stalwart Senator from Washington especially that part concerning America's international relations. His position is of great interest to Americans in the Far East, more so, as his ideas are in complete harmony with those of other Republican presidential aspirants, who see in the manhandling of America's Oriental diplomacy the menace of future trouble.

The process of making a "supreme sacrifice" of America, and "of joining our fortunes with the fortunes of men everywhere" should be stopped. The opposite and ancient policy of our fathers must be restored—of saving instead of sacrificing our great institutions, and of promoting in every honorable way the interests of our people. The process of internationalizing our fortunes must be reversed, and the separate interests of this nation, with due regard for the rights of others, must be cherished again."

"Every American soldier, except those engaged in diplomatic or other peaceful service, should be at once withdrawn from Europe and the *continent of Asia;* and the work of recruiting and transporting military forces of the United States for service in Siberia and Germany and the plans being made for sending an American army to Turkey should be at once suppressed."

"The proposal which has been recently presented to the American people that the United States should become a trustee for the world, should be denounced as destructive of liberty and ruinous to the American people, as well as injurious to the peace and safety of the world."

"The recent assumption by certain officials of our government of jurisdiction of the settlement of foreign controversies, which are of but remote concern to us, has engendered racial animosities against the United States. We should cease officious meddling with other people's affairs."

In this clear cut declaration is presaged the withdrawal of American official support to any international scheme for the financing of China, a scheme that can only invite the most serious consequences in 1923 when the question of the extension of the Liaotung lease comes up for adjustment. It also sounds the note of warning against further diplomatic intervention into the affairs of China, Japan and Russia.

Although the Convention has voted for Major-General Leonard Wood, the principles so clearly and fearlessly laid down by Senator Poindexter, will undoubtedly be incorporated into the official platform for the presidential campaign.

G. B. R.

Native Labor in Shanghai

The Chairman of the Ewo Cotton Spinning and Weaving Company, of Shanghai, Mr. A. Brooke Smith, had the following interesting remarks to make about native labor in Shanghai. Wages are rising, unquestionably, but so will the purchasing power of the people, which is what is wanted after all. Mr. Brooke Smith says:

"Native labor is a factor that is causing considerable difficulty and I am afraid must give us much anxiety in the future. Until recently, this has been plentiful, but owing to the rapid growth of Shanghai as an industrial centre, which of course brings in its train the housing problem, there can be no doubt that, with the new cotton mills and other industries, building and projected, we may expect still greater trouble in finding sufficient native labor to keep our mills fully supplied. The welfare of our workers has always been one of the proudest traditions of my firm, and I may say that we are prepared to face this problem in a generous spirit. When we found that the higher cost of living necessitated a reconsideration of our native wages lists, we advanced them all round about 12 to 15 per cent. last spring, and since then additional grants have been made where necessary and also in recognition of good work. We have further made substantial contributions towards the upkeep of the Yangtszepoo Social Centre as a night school and elementary technical school for our native staff and also towards the establishment of a hospital, under the same auspices, adjacent to our mills."

Japan's Metropolitan Electric Railways

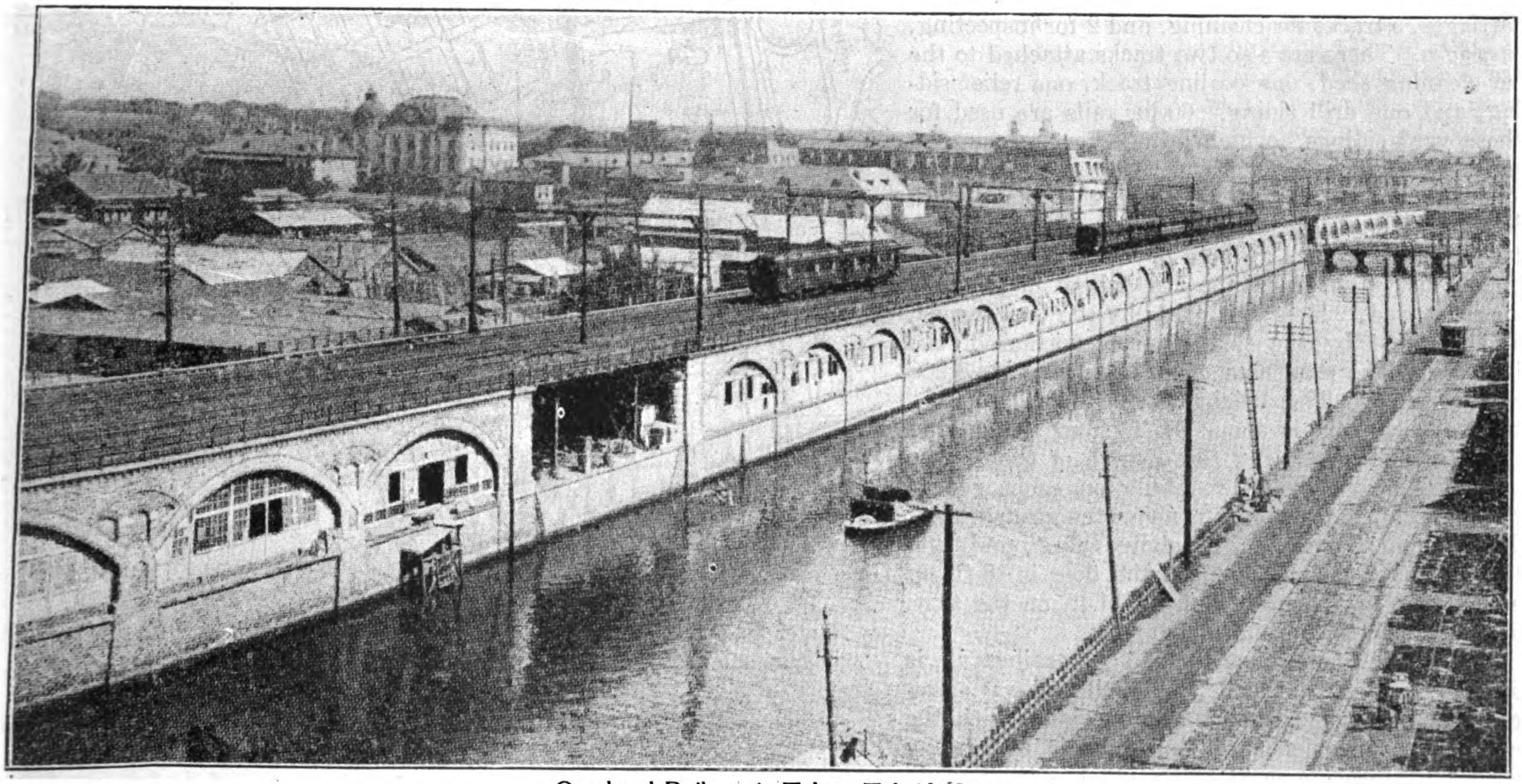
IT was as far back as 1889 that the idea of building an overhead line through the city of Tokyo, to serve as the direct chord between the two metropolitan termini—Shimbashi and Ueno—was conceived as part of the street improvement plan of Tokyo. The idea became one of practical importance. when the steady growth of traffic on the lines serving the metropolis, particularly the Tokaido and the North-Eastern, began heavily to tax the poor capacity of the Yamate Line, which forms the sole link connecting the two foregoing lines, not to mention the fact that the two stations were found wholly inadequate to cope with the present and prospective development of traffic. The undertaking was started, and as a first step it was decided to lay a deviation from Shimbashi station (the then terminus of the Tokaido Line), and to make arrangement for the construction of a central station in the heart of Tokyo.

Towards the end of 1899 the purchase of land was taken in hand, but unfortunately the undertaking was repeatedly postponed, or even suspended, for want of funds, and it was more than a decade before the first section of the line was finished. In the interim, the electrified section of the Yamate Line, described elsewhere, was extended to Karasumori (the name of which was later changed to Shimbashi) in 1909, to Eirakucho in June, 1910, and in September to Gofukubashi, a temporary station adjacent to the projected Central station. In December, 1914 the construction of the Tokyo Central station was finished, and the station was opened for service. Simultaneously with the opening of the new line, the Shimbashi station was turned into a goods depôt and its name changed to 'Shiodome.' Moreover, the foreshore of Shinagawa, the southwestern entrance to Tokyo, was reclaimed to the extent of about 330,000 square yards, and a plan was prepared for laying out a large classification yard on the hump principle. Work is now in progress on the extension of the station premises, which, when completed, are expected to enable the Railway Management to effect a complete revolution in the mode of marshalling.

The elevated urban line is one of quadruple track, two of which tracks are used for suburban, and the other two for through train, service. Both groups of tracks were originally designed for steam trains, but, in view of the prospective growth of traffic, the quadruple track plan was, later on, changed to the sextuple. By that time, however, the bridge work had been practically completed on the quadruple plan, and the scheme of laying two additional lines had accordingly to be deferred to a later opportunity. At present, two tracks only are electrified, the other two being reserved for the operation of steam trains. The tracks are carried on masonry and steel viaducts, concrete or brick arches spanned between masonry piers being the standard construction, with steel plate girder structures supported on steel columns for the street subways. The floor thickness was reduced to a minimum by the use of half-through girders with solid floors. The cost required for the work totalled Y.9,976,000, approximately. A further extension of the overhead line leading north to Manseibashi and Ueno stations has been made, the line carrying 6 tracks between Tokyo and Kajicho, 2 tracks between Kajicho and Manseibashi, and 4 tracks between Kajicho and Ueno.

The New Tokyo Station

The new Tokyo station forms an important feature of the improvement work which the Imperial Government Railways have been carrying out for some years. With the completion of the urban overhead lines, the new station will be made to serve as a converging point of all State lines in the metropolis. The work was started in March, 1908 and



Overhead Railway in Tokyo, Tokaido Line

completed in December, 1914. The building forms a magnificent example of Renaissance architecture. The cost of construction of the station was approximately Y.3,800,000.

The station is situated practically in the heart of Tokyo and within easy reach of the most prosperous quarters of the city. The ground, 2,579,350 square yards in extent, lies within the outer moat of the old Yedo Castle. The tracks and platforms are laid on the elevated structures, while the main building and the marshalling yard are on the street level, access to the platforms being gained by flights of stone steps from the subways below. The track layout provides for 8 tracks, served by four platforms, two of which, 775-ft. by 40-ft., are designed for steam trains, inbound and outbound. The other two, which measure 429-ft. by 40-ft. and 429-ft. by 30-ft. respectively, are used for electric trams.

The front of the building is provided with four entrances. The southern entrance is used for outgoing passengers, the two northern entrances serve as exits for the incoming, while the central entrance is reserved for the use of the Imperial Family. The parcels and luggage received at the checking counter are brought from the subway up to the platform by means of elevators. Mail facilities are similarly arranged.

East of the elevated tracks a plot of land was allocated for a station yard, where siding accommodation and other facilities are provided, including a provisional engine-shed, a shed for cleaning and repainting carriages, a turntable, a signal tower, mechanics' shops, and stationmen's quarters. On the upper ground there are 5 spur tracks for electric trams and 2 spur tracks for steam locomotives. For these tracks 75-lb. rails are exclusively used, the aggregate length of the tracks being 4 miles 11 chains. The marshalling yard, which is on the street level, is connected with the elevated tracks by means of two tracks of 1 in 60 gradient.

The yard is provided with 17 spur tracks for carriages, 5 tracks for cleaning, and 2 for inspecting, carriages. There are also two tracks attached to the car-cleaning shed, one coaling track, one relief siding, and one drill siding. 60-lb. rails are used for these yard sidings, which altogether measure 5 miles 40 chains.

The main building, of which the total length is 1,104-ft. and the width of which varies from 66-ft. to 132-ft., covers an area of 9,364 square yards, of which 108 square yards are taken up by the single-storied, 224 square yards by the two storied, and the rest by the three-storied, portion of the building. The total area of all the floors is 28,968 square yards. The height of the building in the three-storied part is about 54-ft. from the ground level to the eaves. The top of each of the domes, crowning an octagonal vestibule on each side of the building, is about 124-ft. above the ground level. The ground floor is 1.6-ft. above the ground, and the height of the ceiling from the floor is 18-ft. on an average on the ground floor, 14-ft. on the first, and 10-ft. on the second, floor.

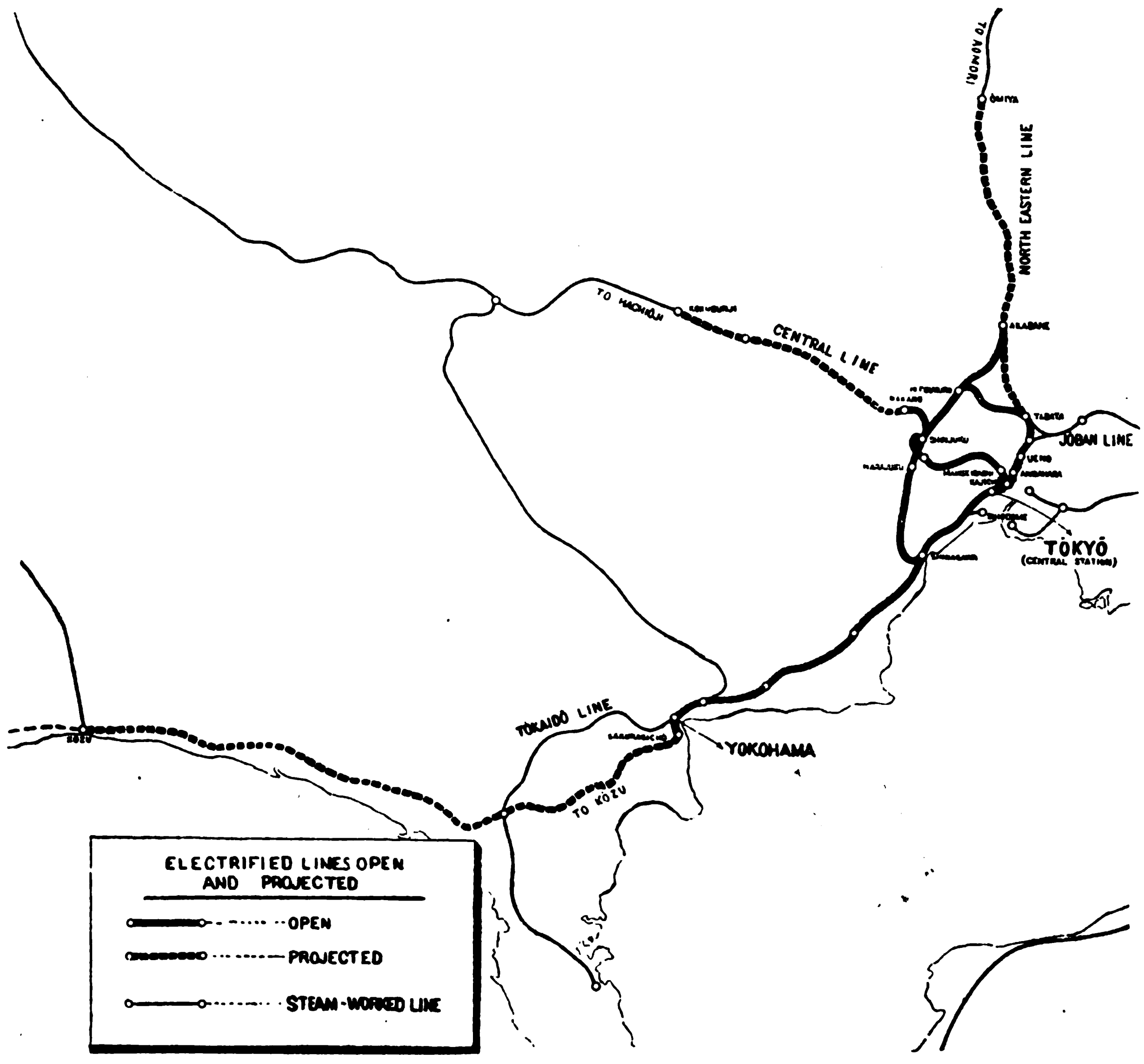
Electric traction, as applied to railways, is specially suited to Japan, where the railways pre-eminently traverse mountainous regions, with the consequent prevalence of long tunnels and heavy grades. Already a good beginning has been made in this respect for suburban service in and around Tokyo and for the mountain section of the Shin-Etsu Line over Usui Pass. The satisfactory results shown by the electrified

Elevated Urban line, Tokyo-Shimbashi, Japan

lines have led the authorities to consider the extension of the field of electric haulage to some of the heavy trunk lines.

Central Line

The electrification of the suburban service in Tokyo had its inception before the nationalization. In 1905 the now defunct Kobu Railway electrified the city portion of its line (now styled Central Line)—between its metropolitan terminus, Manseibashi, and Nakano, on the outskirts of Tokyo, a distance of 8 miles. A power station was provided at Kashiwagi, and the current was transmitted to the Ichigaya substation in the form of the 3-phase, 3,000-volt system. In the two substations, one of which was located on the premises of the power station, the current was transformed to 600 volts D.C. by rotary converters. The overhead double-trolley system was originally adopted for the line, from fear of the possible influence of electrolysis upon the water and gas pipes of the Municipality. There were in service 32 rigid-wheel motor cars, equipped with two 50 h.p. motors and multiple unit control equipment and air brake. The automatic block signal of the " Union " disc type was installed in order to ensure smooth operation. This line, which represents the first electrification in Japan, was taken over by the Government in 1906.



Yamate Line

The suburban expansion of Tokyo and Yokohama in recent years has been such that the limit of capacity of the interurban lines was reached, and some expeditious method of relieving congestion claimed urgent attention. The possibilities of electric motive power as a means to this end were investigated by the Railway Management for many years, the result of the investigations being the scheme of electrification on the Yamate and the Tokyo-Yokohama Line.

The Yamate Line, which was taken up for electrification in 1908, is a suburban belt line and serves as an outer connection for most of the main lines radiating from the two metropolitan termini, Tokyo (formerly Shimbashi) and Ueno. It branches off from the Tokaido Line at Shinagawa, the southern gate to the capital, and, skirting the western side of Tokyo, bifurcates at Ikebukuro, one branch leading to Ueno, the terminus of the North-Eastern Line, and the other connecting with the same line at Akabane, 6.2 miles north of Ueno. The distance is 19.3 miles between Ueno and Tokyo, excluding the 3.5-miles Ikebukuro-Akabane branch. The electrification was completed on the whole line in December, 1910, when a half-hourly steam train service was superseded by an electric train service, cars being run from both directions at intervals of 15 minutes. The trolley line is on the overhead double-trolley system as in the case of the Central Line. Arrangements were made to supply current from the Kashiwagi power station to one portion of the new electrified line through a temporary substation near Ikebukuro, which was equipped with two 100 k.w. rotary converters transplanted from the Central Line for the purpose. For the remaining portion of the line and the Central Line, current was purchased from the Tokyo Electric Tramway Co. at 600 volts D.C. Ten bogie motor-cars were newly built for the use of the Yamate Line. Each of these cars is 50-ft. in length, 8-ft. 6-in. in width, and weighs 26 tons approximately. It contains 52 seats and 44 straps. The car equipment comprises four 50 h.p. D.C. series motors with commutating poles, and two master controllers with multiple unit control equipment and straight air brake with the emergency service valve.

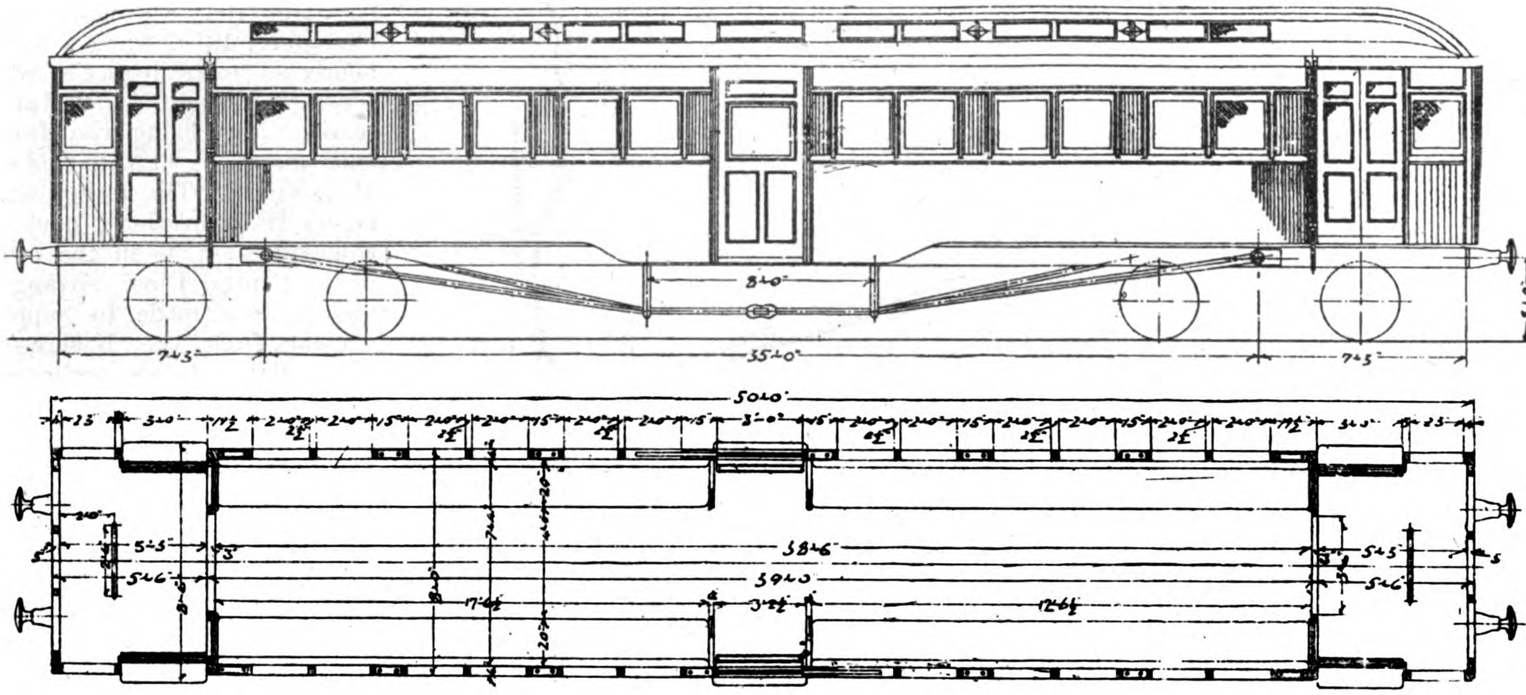
The subsequent development of suburban traffic demanded the improvement of the electric service of the Yamate Line in the shape of the extension and remodelling of the substations, the provision of new rolling stock, and the installation of block signalling apparatus. The Ikebukuro substation was accordingly equipped with two sets of 300 k.w. rotary converters and 300 ampère hours (one hour discharge rating) in place of the existing machines, and secondary batteries with Pirani automatic reversible boosters. The 100 k.w. rotary converters thus superseded were transferred to the Kashiwagi power station, the total capacity of which was in consequence increased to 400 k.w. The power station was also equipped with 300 ampère hour buffer batteries. The

new rolling stock provided comprised 40 bogie cars, 50-ft. long and 8-ft. wide, weighing 26 to 28 tons, and having a seating capacity of 48 with 44 straps. The line then had 48 additional block signals of the Holl's Co. two arms semaphore type installed. This improvement tended materially to increase the capacity of the service, and at present trains of two or three cars coupled are run at intervals of 7½ min. during the rush hours of the morning and evening and of 15 min. for the rest of the day.

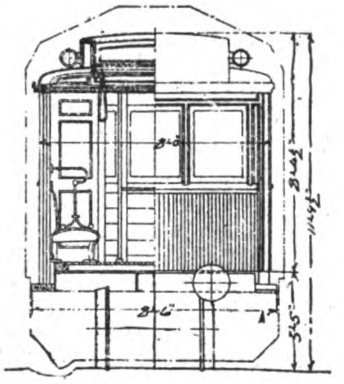
Tokyo-Yokohama Line

We have now come to the more ambitious project, which comprises the electrification of the line between Tokyo and Yokohama and complete renovation in the power supply arrangements for all the electrified lines in or near Tokyo.

Elevation and Section of 4-wheel Bogie Third Class Electric Car, on the Yamate and the Central Line



Between Tokyo and Yokohama a double-track line was newly laid for electric operation along the existing steam-worked line. The electrification was started in 1912 and a regular service was inaugurated to the new Yokohama station in May, 1915 and to Sakuragicho (formerly Yokohama) station in December of the same year. Trains composed of two cars, sometimes with a trailer between, are despatched from both ends at intervals of 15 minutes, and 7½ min. during rush hours, when express trains are worked in addition. With the maximum speed of about 54 miles per hour, the whole distance of 19.2 miles is covered in about 47 min., at a schedule speed of 24.5 miles per hour. This represents a substantial gain over the steam operation in point of speed as well as in frequency of service, the latter having been increased from 46 to 100 runs.



Electric System

One of the features of the new project was the provision of a big power station and four substations planned to supply current to the existing Central and Yamate Lines, as well as to the new electrified line between Tokyo and Yokohama, and also to feed the plants and stations about Tokyo for mechanical and lighting purposes. In this way the power supply method was completely remodelled and the supply was placed on a footing of self-sufficiency.

The distribution of power is shown diagrammatically in the illustration. The electric power generated at the power station is delivered to each substation by extra high-tension 11,000 volt transmission lines, wired on the suspension system, or by underground cables, and the feeders distributing power to the trolley line are mainly wired, except part of the route in or near the city where underground cables are used. The reason why the D.C. 1,200 volt high-tension current was adopted on so short a line (except the city portion where 600 volt. low-tension system is used) was because of the contemplated extension of the electric service on the Tokaido Line to Yokosuka, 38.8 miles from Tokyo, to Kozu, 48.2 miles from Tokyo, and even to Numazu, about 79 miles from Tokyo, upon the completion of the Kozu-Numazu deviation now under construction. The adoption of the high-tension system, though expensive at the outset, will prove far more economical in the event of the projected extension being realized.

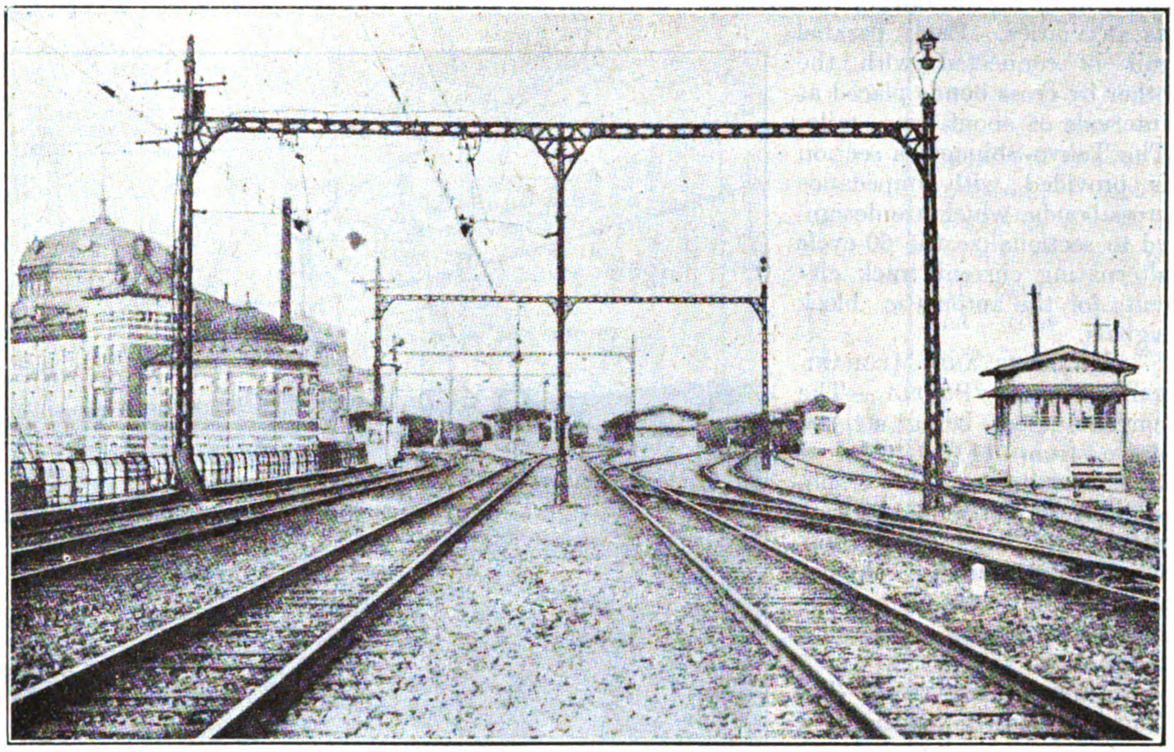
TRANSMISSION LINE.—Two circuit lines (6 wires) are laid in both directions—northward on the side of Tokyo and southward on the side of Kawasaki (Yokohama). The overhead lines are laid between the power station and the Kawasaki substation (a distance of 3.2 miles) and the power station and Omori (2.5 miles). The lines are carried on iron towers, which are generally placed 150 feet apart along the right of way. The transmission lines are 18-strand B.W.G. No. 12 hard-drawn copper wires on the Tokyo side, and 7-strand B.W.G. No. 10 on the Kawasaki side. The porcelain insulators used on the transmission lines are capable of standing 25,000-volt pressure per min. The lines are so laid as to have a tension of 1,500 lb. at the lowest temperature. Two underground circuits are laid between the Omori and the Oimachi substation, where they bifurcate, one leading to the Eirakucho (Tokyo), and the other to the Harajuku, substation. The underground cables between Omori and Oimachi are 11,000-volt paper-insulated, lead-covered, armored steel cables. They are 19-strand B.S.G. No. 10, with an outer diameter of approximately 3 inches, weighing about 8 lb. per ft. They are laid at a depth of about 2 feet below the formation level along the right of way, and where they pass under the station yards, level crossings, or through damp soil, they are encased in ducts of iron, clay, or re-inversed iron.

D.C. Distributing Line

TROLLEY LINE.—The portion of the electrified line outside of the capital, i.e., between Shinagawa and Yokohama, is worked by a single trolley line of 1,200 volts D.C. laid on the single suspension system, and the city portion between Tokyo asd Shinagawa, by a single trolley line of 600 volts D.C. on the compound catenary system, owing to the number of electrified tracks. The trolley line is B.S.G. No. 0000 hard-drawn, grooved copper wire, and 7-strand B.W.G. No. 8 steel wires (½in. in diameter) are used for the messenger cables on the 1,200 volt section, and two of B.S.G. No. 0000 wire, 7-strand B.W.G. No. 6 steel wire for the main messenger, and 7-strand B.W.G. No. 11 steel wire for the auxiliary messenger.

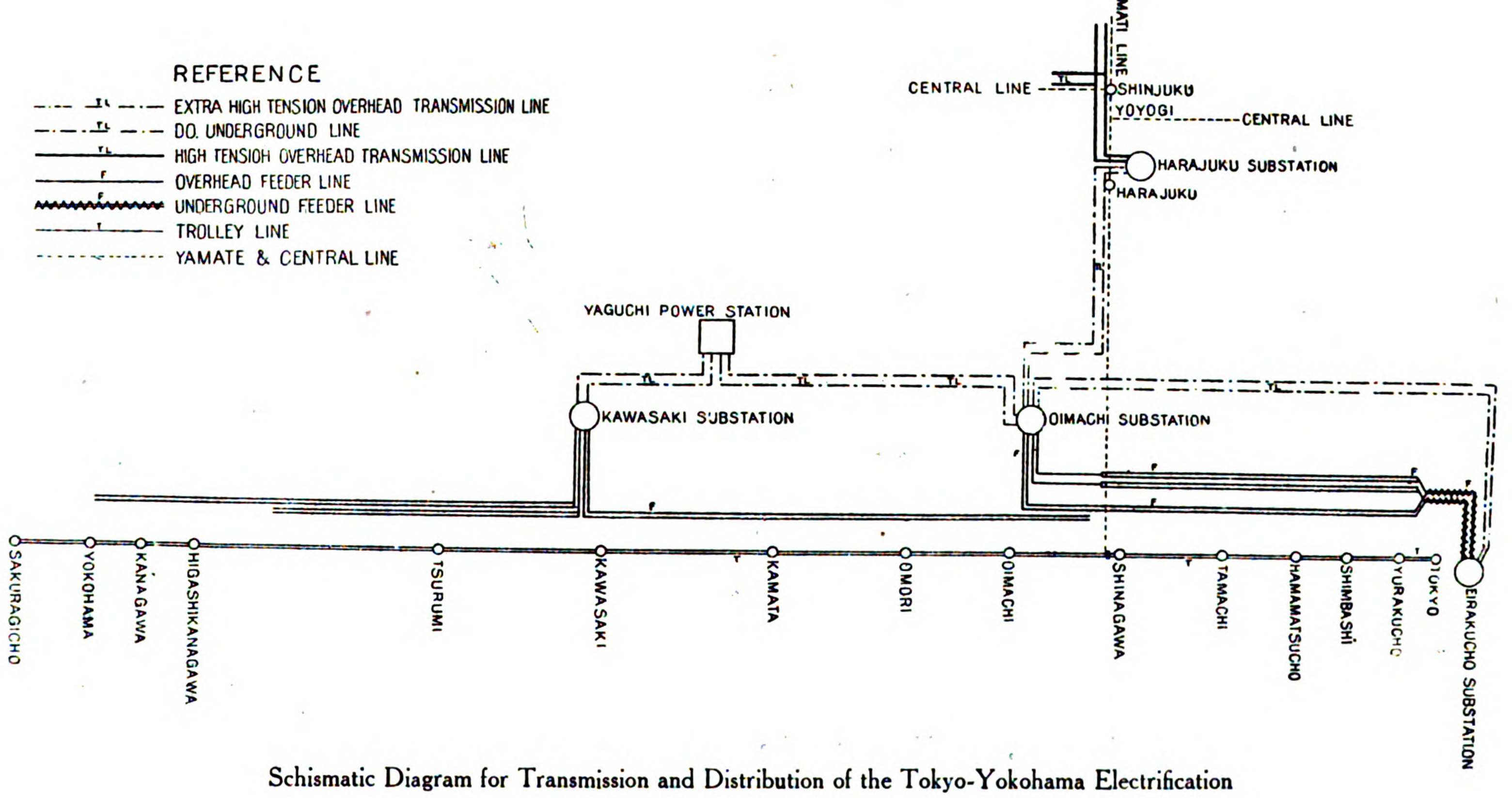
POLE CONSTRUCTION.—As stated above, the overhead power transmission lines, the distribution lines, and the trolley lines are entirely supported on iron structures, which are of the "bridge" type for the compound catenary trolley section and of the "centre pole" or the "side pole" type for the single catenary trolley section.

The poles are placed 200ft. apart on the Tokyo-Shinagawa section, where the line is of three to six tracks, while on the double-tracked section between Shinagawa and Yokohama, they are planted at intervals of about 150ft. apart on tangents, about 120ft. apart on curves of 40ch. radius and over, and about 75ft. apart on curves of 15ch. radius and over. Every third pole has a wooden steady arm about 5ft. long fastened thereto by means of springs. The dead section is provided at Shinagawa station where the 1,200 volt section passes into the 600 volt. There the trolley wire for a length of 300ft. is absolutely insulated from the adjacent sections, so that the motorman may change the equipment of his car from 1,200 volt to 600 volt or vice versa.



Electrified Line, Tokyo Station Yard

FEEDERS.—For feeders, overhead wires carried on the main poles are laid throughout the route, except under the ground of Tokyo station yard. The current feeding points are located at each station and at an inter-station point about one mile apart from each other. Automatic section switches of G.E.S.W. 13 type are inserted into the feeders, used for



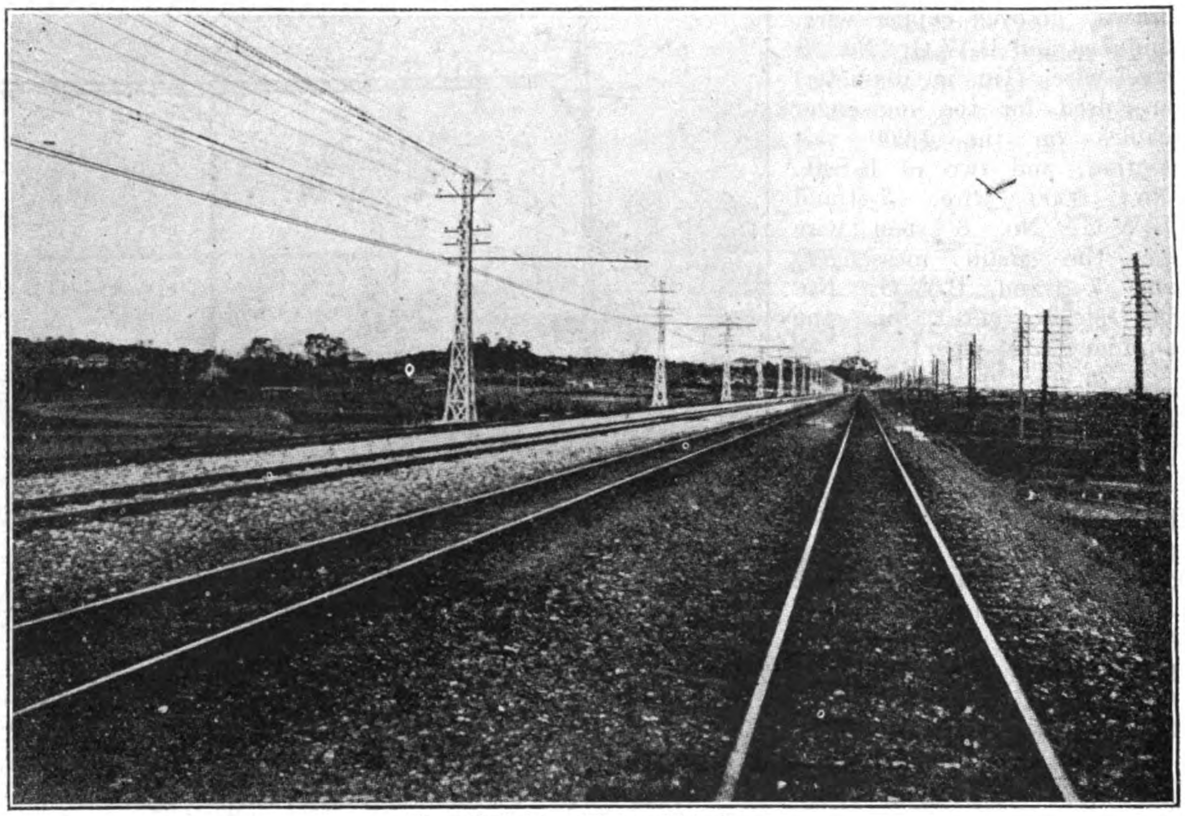
Schismatic Diagram for Transmission and Distribution of the Tokyo-Yokohama Electrification

feeding purposes and sectionalizing feeders, so that the supply of the power may be automatically stopped for any section which may happen to require emergency repair,—a device which (by connecting the trolley line with the feeder lines at many feeder points) has the further advantage of minimizing the loss of power due to distribution.

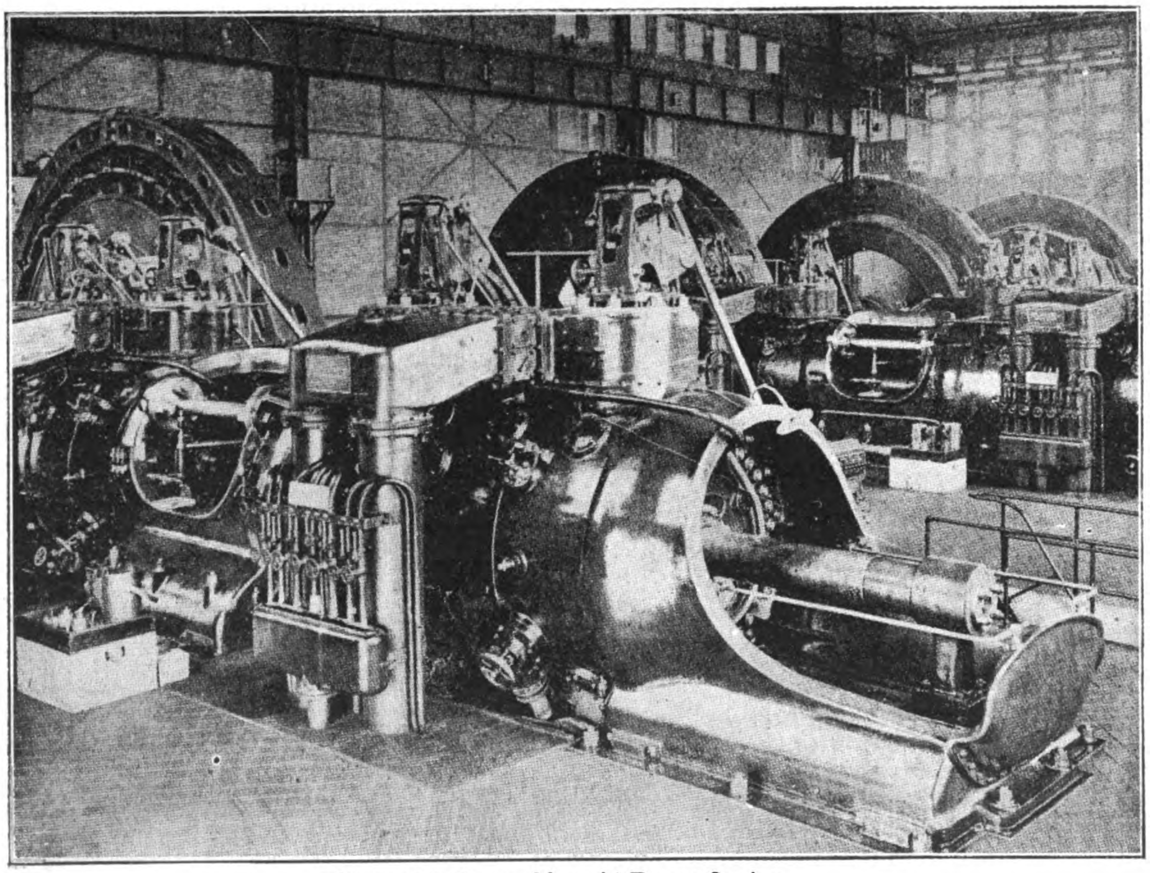
RETURN CIRCUITS.—The rails of the new electrified tracks between Tokyo and Yokohama are used for main return circuits, while all the rails of the steam-worked train tracks serve as auxiliaries. Each parallel rail is connected with the other by cross bonds placed at intervals of about one mile. The Tokyo-Shinagawa section is provided with impedance cross bonds, which are designed to sectionalize the 60-cycle alternating current track circuits for the automatic block signals.

LIGHTING AND MECHANICAL POWER SUPPLY.—The current, after being stepped down from 11,000 volts to 3,300 volts at the substations, is distributed to each plant and each workshop, where it is further stepped down to 100 volts for lighting and 200 volts for mechanical purposes.

POWER STATION.—The Yaguchi power station is located practically halfway between Tokyo and Yokohama and about a mile off the railway lines. The peculiarity of the station is that it is driven by gas engines operated by Mond's power gas. The station is equipped with four gas engine alternators, three sets of Mond gas producers, with ammonium sulphate recovery apparatus, two 400 k.w. D.C. generators driven by a non-condensing steam engine, and two batteries of Babcock and Wilcox boilers. The gas engine, of the Nuremberg type, is a twin-tandem, double-acting engine. Each of the cylinders is 47ft. 5in. in diameter and 51ft. 125in. strokes, with a speed of 94 revolutions, and is capable of developing 2,163 h.p. effective.



Electrified Line, Tokyo-Yokohama

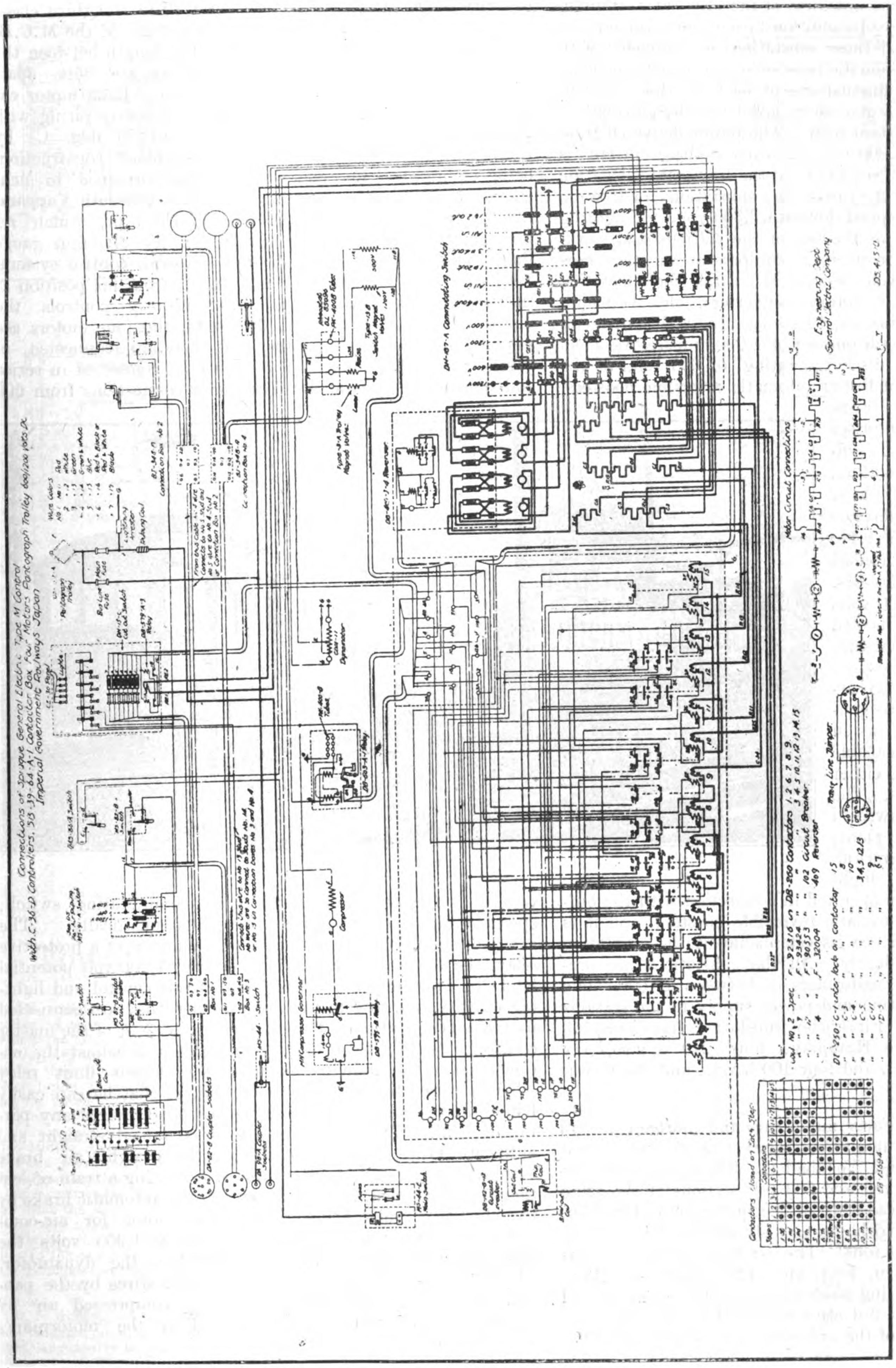


Generating Room, Yaguchi Power Station

The engine is connected direct to the 1,500 k.v.a. 3-phase alternators 11,000-volt, 25-cycles. The large revolving field of the alternators does the duty of flywheels in keeping its cyclic variation below 1/250, a fact which facilitates the parallel operation of the generators. Two inlet valves are fixed on top of each cylinder and are controlled by the same eccentric, with the exhaust valves fixed under the cylinder. Exhaust gases are conducted to the exhaust boiler where their thermic power is utilized for making steam.

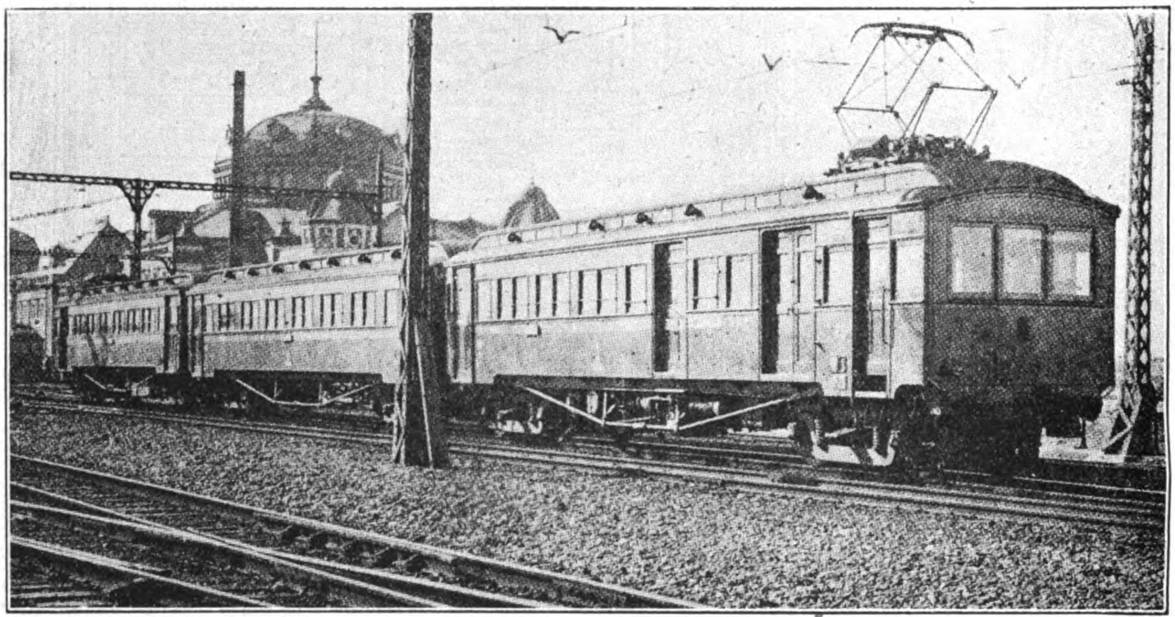
The eccentric is put on the crank shaft, which gears with teeth with the main shaft and makes one revolution per two revolutions of the main shaft, so that one impulse for the inlet and exhaust valves is obtained for every two revolutions. The inlet valves are opened by sliding blocks worked by two rolling levers and regulators, the frequency of the impulses

being arranged to vary according to the position of the blocks. Should it be necessary, however, to alter the strength of the charge, as a result of the quality of the producer gas being changed by the kind of coal used or any other circumstances, means are provided by which the area of the gas and air openings in the regulator may be varied. Three igniters are installed on each cylinder. The pistons, the cylinders, the exhaust valve cases and exhaust valve sheets are cooled by a continual circulation of water. The engine is set in motion by means of two air compressors, each of which is worked by a 30 h.p. motor-dynamo. It may be remarked that the unit generator for such a power plant ought to be of at least 3,000 k.w. in size, but the structural limitations of the Mond gas engine of tandem compound type obliged the Railway Management to adopt a machine of 1,500 k.w., which is the maximum capacity for an engine of this structure. Again, in adopting the gas engine, which as a matter of course entails many difficulties in driving, especially for the parallel running of the alternators at fluctuating load, the Railway Management was chiefly guided by considerations of economy, for, apart from the relatively low cost of the initial installation of the machine, the gas engine of this type was judged especially adaptable for the use of cheap coal. It was ascertained as a result of tests that when in operation at full load, no more than 2-lbs. of coal are required per k.w. of the watts output. A further advantage of the apparatus is that it is contrived for recovering the ammonium sulphate as a by-product, and this makes up for one-third of the cost of fuel.



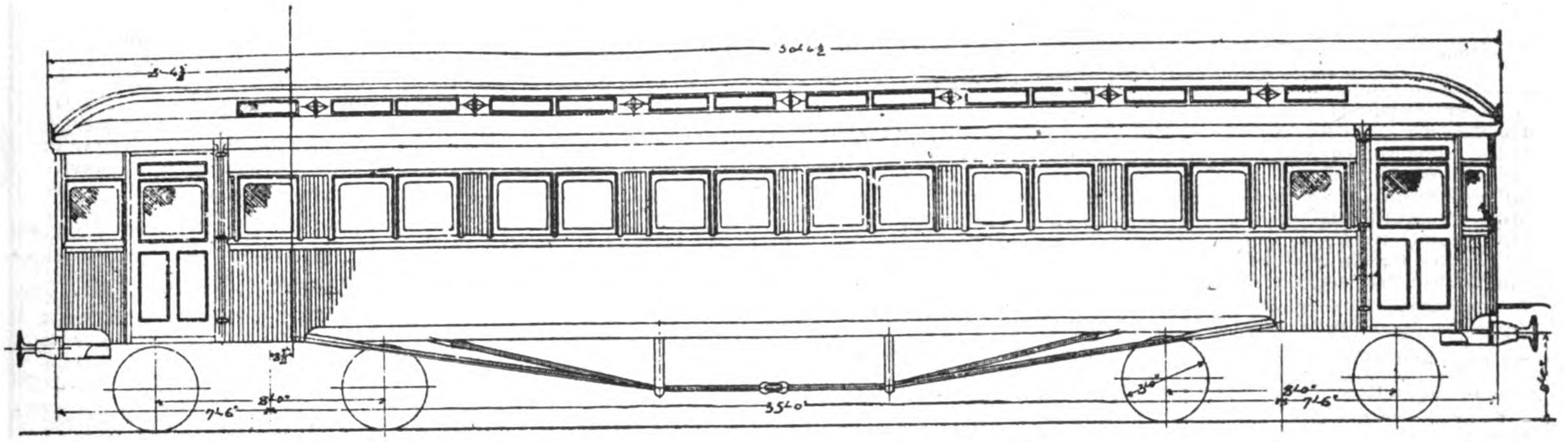
SUBSTATIONS.—Four substations have been newly established, in addition to the two in existence at Ikebukuro and Kashiwagi. One of the new substations is located in the compound of the new Tokyo station at Eirakucho, while the three others are situated on the outskirts of the city—at Harajuku, Oimachi, and Kawasaki. In addition to the rotary converts or motor generator sets, all these substations are provided with storage batteries and automatic reversible booster sets, it being designed to buffer the fluctuations of load at the Yaguchi power station, where the generators are driven by gas engines suited to operate at constant load. The power delivered from the power station at 11,000 volts, 25-cycle 3-phase current, is partly converted to 1,200 volts D.C. at the Kawasaki substation and to 600 volts D.C. at the three other substations for traction purposes, and partly stepped down to 3,300 volts for lighting and mechanical power for the use of the stations and workshops. As regards the converter equipment in the new substations for the 600 volts section, the Eirakucho substation has four sets of 500 k.w. rotary converters, the Oimachi, three sets, and the Harajuku, two sets. In addition, each substation is provided with one set of 1,000 ampère-hrs. storage batteries (one hour discharge rating) of 600 volts at the terminals and two sets of Pirani automatic reversible boosters. The equipment of the Kawasaki substation comprises three sets of 1,000 k.w. synchronous motor generators, which consist of two 500 k.w. 600 volts D.C. generators directly connected with 1,440 h.p. 11,000 volt synchronous motors, and 1,000 ampère-hrs. storage batteries of 1,200 volts at the terminals, connected with two sets of Lancashire automatic reversible boosters. The switch boards are so arranged as to connect two generators either in series or in parallel, making them capable of running the section at either 1,200 volts or 600 volts. The special feature of the Kawasaki substation is that the plant, which is designed to convert alternating current to high-tension direct current, is operated in connection with the buffer batteries and the automatic reversible boosters, and it is gratifying to note that since its establishment the substation has been working excellently. All the substations are provided with step-down transformers of between 11,000 volts and 3,300 volts for lighting and power supply to the stations and workshops. The Eirakucho substation has four 150 k.v.a. transformers, the Harajuku, four 240 k.v.a., the Oimachi, four 130 k.v.a., and four 100 k.v.a., and the Kawasaki, four 150 k.v.a.

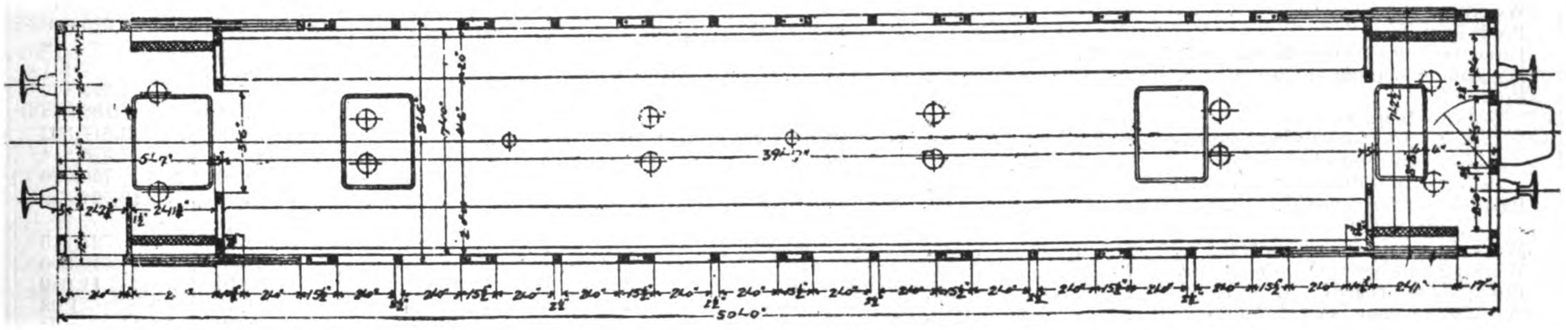
CAR EQUIPMENT.—Forty motor-cars and fourteen trailers were newly built and put into commission on the electrified line between Tokyo and Yokohama. These cars can be operated on both 1,200 volt and 600 volt sections at the same maximum speed. The car body of the motor-car is 18ft. 6in. wide, 50ft. long (from vestibule to vestibule), and 12ft. 15in. high, weighing about 14 tons. The car body of the trailer is 8ft. 6in. wide, 52ft. 11in. long, and 12ft. high, weighing about 15 tons. The rolling stock comprises three kinds—2nd and 3rd class composite, 3rd class cars, and luggage and postal vans. The interior of the 3rd class motor car is 7ft. 10in. wide and 39ft. 7in. long, having a seating capacity of 56, with 47 straps. The 2nd class compartment is 19ft. 7.5in. long and has two longitudinal seats accommodating 12 passengers each. The trailer is built for 82 passengers; it has a seating capacity of 26 in the second class and 30 in the third class, with 26 straps. The truck is a 4-wheel bogie of the M.C.B. type with wheels of 36in. diameter. The length between the wheel bases is 8ft., and the bogie centres are 35ft. apart for the motor car, and 36ft. for the trailer. Each motor car is equipped with four motors of 105 h.p. hourly rating with a temperature rise of not exceeding 70 to 75 deg. C. by thermometers. The armature is of standard construction, being equipped at one end with fan braid designed to neutralize the rise in temperature. It is this ventilating apparatus that enables the motor to develop 105 h.p., which represents the highest rating possible on the 3ft. 6in. gauge line. The controller is of the multiple unit control system. By means of this device, the motorman, from his position at the front of the forward car, simultaneously controls the motors. When operating on 600 volts, the four motors are first arranged in series-parallel and then are connected in parallel; on 1,200 volts the motors are all connected in series and then in series-parallel. The motor connections from 600 volts to 1,200 volts are changed by a commutating switch, operated either electrically or electro-pneumatically. The safety of operation is further ensured by means of a protective relay, the function of which is to prevent 1,200 volt potential being inadvertently applied to the 600 volt control and lighting circuits, and also to the motors when they are connected for 600 volt operation. The main claim in favor of the master controller is that it enables the motorman to adjust the acceleration of the train by means of the current limit relay which governs the rate of acceleration, so that he can easily handle his machine even when he has not acquired any particular skill. The air-brakes are of combined straight and automatic type. This brake acts on the straight air brake system in single-car service, while, in operating a train of less than 5 cars coupled, it is converted into an automatic brake by the change of valve connections. The motor for air-compressing purposes acts at 600 volts, and at 1,200 volts the additional supply of energy is obtained from the dynamotor. The current is collected from the overhead wires by the pantagraph, which is raised or lowered by compressed air by means of two magnet valves installed in the motorman's compartment.



Electric Train

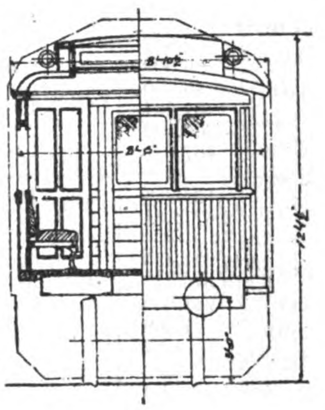
Elevation and Section of 4-wheel Bogie Third Class Electric Car, on the Tokyo-Yokohama Line; passenger capacity, 103; 56 seats and 47 straps





COST.—The electrification of the Yamate Line cost Y.2,049,650, including Y.1,346,650 on the rolling stock. The Tokyo-Yokohama electrification and the connected works on power supply arrangement cost Y.6,987,000, of which Y.2,652,000 was claimed by the provision of the power station, Y.1,008,400 by the four new sub-stations, Y.1,008,400 by the line equipment, and Y.1,649,000 by the rolling stock.

RESULTS OF WORKING OF ELECTRIC MOTOR CARS.—The results of working of the electric motor cars on the Central, the Yamate and the Tokyo-Yokohama Line are shown below :—



Year ending March 31	Electric Car No.	Electric Car Seating capacity	Car mileage	Current consumption	Current consumption per car mile
			Mile	K.W.H.	K.W.H.
1908	... 26	1,040	409,664	1,151,692	2.81
1909	... 28	1,120	510,569	1,753,508	3.43
1910	... 42	2,515	725,680	2,318,379	3.19
1911	... 44	3,621	1,635,185	3,823,363	2.34
1912	... 66	4,597	1,910,052	4,563,145	2.39
1913	... 72	4,842	2,343,978	5,362,284	2.29
1914	... 86	6,188	2,476,248	5,823,941	2.35
1915	...124	10,625	2,694,687	5,955,819	2.21
1916	...130	11,458	5,046,775	11,380,603	2.26
1917	...125	10,984	6,496,096	14,569,041	2.30

Education in Netherlands India

The article "Metamorphosed Chinese in Java" in the December number of the FAR EASTERN REVIEW contains some interesting facts concerning the life of the Chinese settlers in the Dutch East Indies, who, like those in the Straits Settlements and the Federated Malay States, often rise by their labor and their thrift to wealth and social standing and who prefer living under Western legislation to returning to their native land with its purely Chinese conditions of existence.

The author of the article, however, cannot have been quite *au courant* of the extensive educational work that is being carried on in the Netherlands Indian Archipelago, and he is mistaken where he says that the Chinese there persistently refuse to study Dutch, and that the Netherlands colonial authorities have done little to encourage their educational work or their commercial expansion. These are superficial general remarks which show that the author wrote without studying his subject and without consulting any statistics.

Neither the Netherlands nor the British Governments give any subsidies to the so-called "Hui-kwan schools" which have been started within their colonial territories under the aegis of the Board of Education in Peking. Both, however, provide their own schools and educational institutions.

It is difficult to ascertain how many Chinese children in the Netherlands colonies go to many hundred schools for the natives in which the Dutch language is taught.

The latest statistics are unfortunately not at hand; but we find in the official publications for the year 1917 that there were thirty-one special Dutch-Chinese schools where the medium of instruction is Dutch, attended by no less than 6,407 pupils. A visit to these schools would have shown that they are second to none and probably superior to most of the educational institutions of the Far East as regards *personnel*, equipment and methods of instruction. Moreover there is a normal school in which Chinese are educated to be school teachers and in which the same standard has to be reached as for school teachers in Holland. In addition to the pupils of these various schools there are several hundred Chinese youths who attend the schools set apart for Dutch children, and also the different higher schools and colleges. These latter give access to the universities in Holland, and at the present moment there are nearly a hundred Chinese students from Netherlands India who follow the different university courses at Leyden, Amsterdam and Utrecht, or the Technical University at Delft, and who will one day return to Java and the other islands as doctors, lawyers, engineers. etc.

The author says that the Dutch regard the Chinese as a dangerous alien element. He seems to be unaware of the fact, that the Dutch business houses appreciate the Chinese traders (whether wholesale of retail), as capable, almost always honest, and practically indispensable; that the planter and the manufacturer would not like to do without their industrious Chinese workmen; and that the Government even allows the Chinese to enter official service in various capacities.

These few data show that the article in question is to say the least of it somewhat inaccurate.

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Statistics of the Japanese Government Railways for the Year Ended March 31st, 1918

(COMPARED WITH THE FOUR PRECEDING YEARS).

Item / Year	1917-18	1916-17	1915-16	1914-15	1913-14
Area (square miles)	† 129,247	† 129,247	† 129,247	† 129,247	† 129,247
Population	† 56,035,100	† 55,224,500	† 54,439,400	† 53,668,600	† 53,362,682
Miles of line worked (single) (m.ch.)	5,206.35	5,094.18	5,000.66	4,944.67	4,731.43
Miles of second track (,,)	771.59	741.04	734.52	720.06	734.11
Miles of third track (,,)	1.07	1.07	1.07	1.07	.49
Miles of fourth track (,,)	16.34	16.34	16.34	16.29	3.24
Miles of sixth track (,,)	3.77	3.77	3.77	3.77	1 33
Total miles of main track worked (,,)	5,999.52	5,856.60	5,756.76	5,686.26	5,470.71
Total miles of all tracks (,,)	9,313.28	9,029.19	8,840.14	8,472.29	8,323.22
Average area per mile of line (sq. m.)	21.5	22.1	22.5	22.7	23.6
Average miles of lines per 100,000 of population	10.7	10.6	10.6	10.6	10.3
Average miles of line worked — passenger traffic	5,855.4	5,747.1	5,670.1	5,529.5	5,298.0
Average miles of line worked — goods traffic	5,916.8	5,805.9	5,725.9	5,581.9	5,344.3
Number of Stations	1,712	1,668	1,630	1,604	1,529
Capital (yen)	1,189,913,734	1,108,060,237	1,050,386,964	1,006,923,089	973,091,496
Capital per mile of line (yen)	198,269	189,131	182,391	176,979	177,808
Working revenue (yen)	183,525,143	141,255,333	120,212,355	112,169,616	113,477,055
Working expenses (yen)	84,370,026	61,163,543	55,601,684	57,178,286	55,55[illegible],246
Profit (yen)	99,155,117	80,091,790	64,610,671	54,991,330	58,925,809
Percentage of expenses to revenue	46	43	46	51	48
Percentage of profit on capital	8.3	7.2	6.2	5.5	6.1
Profit :	*99,155,117*	*80,091,790*	*64,610,671*	*54,991,330*	*58,925,809*
Deduct —Inspection and survey expenses (yen)	124,044	86,104	98,841	131,248	188,258
Deduct —Additional works expenses (yen)	12,966,438	3,946,652	2,256,358	3,362,088	2,617,392
Deduct —Interest charges (yen)	40,983,842	39,815,309	36,782,258	37,255,427	35,575,844
Deduct —Subsidies to Private Light Railways (yen)	1,500,000	1,250,000	1,250,000	1,000,000	750,000
Balance (surplus) (yen)	43,580,793	34,993,725	24,223,218	13,242,567	19,794,315
Working revenue per mile (yen)	30,982	24,312	20,982	20,084	21,219
Working expenses per mile (yen)	14,243	10,527	9,705	10,238	10,200
Profit per mile (yen)	16,739	13,785	11,277	9,846	11,019
Working revenue per train-mile (yen)	2.63	2.19	2.03	1.95	1.98
Working expenses per train-mile (yen)	1.21	.95	.94	1.00	.95
Profit per train-mile (yen)	1.42	1.24	1.09	.95	1.03
Locomotives	2,827	2,727	2,680	2,611	2,500
Passenger carriages	6,903	6,875	6,836	6,699	6,453
Goods wagons	46,600	44,391	43,592	43,702	42,705
Aggregate weight of locomotives (ton)	167,664	158,769	148,310.41	142,313.22	132,333.65
Aggregate number of seats of carriages	300,132	299,036	295,029	285,347	269,851
Aggregate loading capacity of wagons	467,021	428,404	408,244	390,345	365,852
Employees	125,888	115,282	112,102	114,964	112,087
Monthly compensation of employees (yen)	2,677,181	2,253,732	2,191,803	2,206,463	2,109,271
Number of passengers carried	245,234,480	197,043,320	172,290,045	166,092,421	167,773,143
Number of passengers carried one mile	5,515,546,330	4,255,374,717	3,856,536,966	3,623,743,236	3,690,964,619
Passenger-miles per mile	941,959	740,439	680,153	655,347	696,671
Passengers per train	159.9	133.4	125.7	123.2	131.7
Passengers per vehicle	12.7	10.9	10.3	10.2	10.7
Average miles of journey per passenger	22.5	21.6	22.4	21.8	22.0
Average number of journeys per capita of population	4.4	3.6	3.2	3.1	3.1
Passenger earnings (yen)	74,159,526	58,745,033	52,220,354	49,942,049	51,363,668
Passenger earnings per mile (yen)	12,665	10,222	8,949	9,032	9,695
Passenger earnings per passenger per mile (yen)	.0134	.0134	.0135	.0138	.0139
Coaching receipts (yen)	84,725,517	64,773,111	57,282,341	54,671,971	55,975,342
Coaching receipts per mile (yen)	14,470	11,271	10,103	9,887	10,565
Coaching receipts per train-mile (yen)	2.46	2.03	1.87	1.86	2.00
Tonnage of goods hauled	48,753,041	42,100,734	35,800,664	35,272,875	36,348,362
Tonnage of goods hauled one mile	5,033,344,425	4,179,134,660	3,309,518,677	2,982,798,481	3,053,852,638
Ton-miles per mile	850,687	719,808	577,991	534,370	571,422
Tons per train	142.6	128.0	115.5	106.7	103.9
Tons per vehicle	5.1	4.6	4.3	4.2	4.1
Tons per loaded vehicle	6.5	5.9	5.6	5.5	5.5
Average miles of goods hauled per ton	103.2	99.3	92.4	84.6	84.0
Tonnage of goods per capita of population	.87	.76	.66	.66	.68
Goods earnings (yen)	87,722,527	69,331,616	56,666,369	51,399,220	53,032,716
Goods earnings per mile (yen)	14,826	11,942	9,896	9,208	9,923
Goods earnings per ton per mile (yen)	.0174	.0166	.0171	.0172	.0174
Goods wagon receipts (yen)	88,439,480	69,861,847	57,043,485	51,750,496	53,368,932
Goods wagon receipts per mile (yen)	14,947	12,033	9,962	9,271	9,986
Goods wagon receipts per train mile (yen)	2.51	2.14	1.99	1.85	1.82
Passenger train mileage	*28,821,355	*26,050,412	*25,100,646	*23,366,888	*22,364,524
Goods train mileage	30,441,886	26,571,150	21,946,022	21,380,696	22,809,091
Mixed train mileage	10,531,872	11,921,812	12,283,814	13,631,283	12,229,188
Total train mileage	69,795,113	64,543,374	59,330,482	57,378,867	57,402,803
Locomotive mileage	85,001,607	77,913,771	71,416,931	69,250,350	68,744,136
Passenger car mileage	434,861,588	391,883,613	374,625,651	355,101,502	345,223,815
Goods wagon mileage	988,281,133	917,937,539	776,732,616	715,924,526	736,984,397
No. of vehicles coupled per train — passenger car	12.6	12.3	12.2	12.1	12.3
No. of vehicles coupled per train — goods wagon	28.0	28.1	27.1	25.6	25.1
No. of vehicles drawn per locomotive	19.68	16.8	16.1	15.5	15.8

N.B. (*) including the mileage travelled by electric trams and steam motor cars converted at 10 cars=one train.

(†) covering the Main Island, Shikoku, Kyushu and Hokkaido.

The Railways of China

Important Facts and Figures Connected with the Existing System

THERE are 6,836 miles, or 11,001.254 kilometres, of railway at present operating in China. The railway system as it exists to-day is located principally north of the Yangtze River. The Shanghai-Nanking line, with the recently connected up Shanghai-Hangchow-Ningpo line, extends the system into south China. Construction now in progress, and plans for future construction promise to connect up the present short lines in the south so as to duplicate there ultimately the facilities now serving the north.

Speaking of the eighteen provinces, China has approximately 735 square kilometres of territory and 67,000 population for each kilometre of railway. Expressed in miles, China has approximately 460 square miles of territory and 107,000 population for each mile of railway. India has 40 square miles of territory and 8,600 population for each mile of railway. The United States has 12 square miles of territory and 3,800 population for each mile of railway. The extent of waterways in China probably will always serve to keep these average figures higher in China than in countries not so favored. Yet railways tend to become more and more an integral part of the industrial machinery of a nation, and these averages, therefore, measure to a certain extent the advance of industrial progress.

Since 1915 main and branch lines have been extended 78.056 kilometres, while loops and sidings have been increased 169.420 kilometres. Second track is almost unknown. Less than eight per cent. of the total length of line consists of branches, and out of 6,913.315 kilometres of track, nearly 75 per cent. is found in main line.

The map given in this issue confirms the fact that Chinese Government railways are essentially through lines connecting strategic points, commercially and politically speaking—the hub of the system as it exists to-day being Peking.

Railway lines in China may be classed under three distinct heads, Government Railways open to traffic, but still technically under construction, private and provincial railways, and "Concessioned" lines.

The word "owned" as used below is employed in a technical sense. It indicates the extent of line behind the securities issued for a particular railway, or behind the investment by the Government in particular railways.

To explain the headings in Table 7 it must be stated that a main line is the line of single track over which trains are operated between the principal terminals. A branch line is one built from a junction point on a main line to an outlying station over which regular traffic trains are run for public services. Other lines built from junction points are classed as sidings regardless of their length. Industrial lines are sidings which connect a main line with a factory, mine, or important industrial enterprise, and are operated exclusively for the use of such establishments.

The order of the provinces named in the table is the same as in previous reports of the Ministry of Communications, and formerly was based on the length of main line each province contained. The total length of main line and branches in 1918 was 5,521.942 kilometres. This represents an increase of 22.169 kilometres, for which the Peking-Suiyuan line* is responsible. That line during 1918 built the Tatung coal branch, in Shansi province, 19.568 km., and the Hsuanghuafu branch, in Chihli province, 8.646 km., a total of 28.214 kilometres.

In addition the Kirin-Changchun made rectifications of its previous figures adding .016 kilometres (Kirin Province) while a new survey of the Chuchow-Pinghsiang line made on the metric system resulted in a reduction of the kilometrage of that line by 6.061 (provinces of Hunan and Kiangsi).

TOTAL KILOMETRES MAIN AND BRANCH LINE IN CHINA.

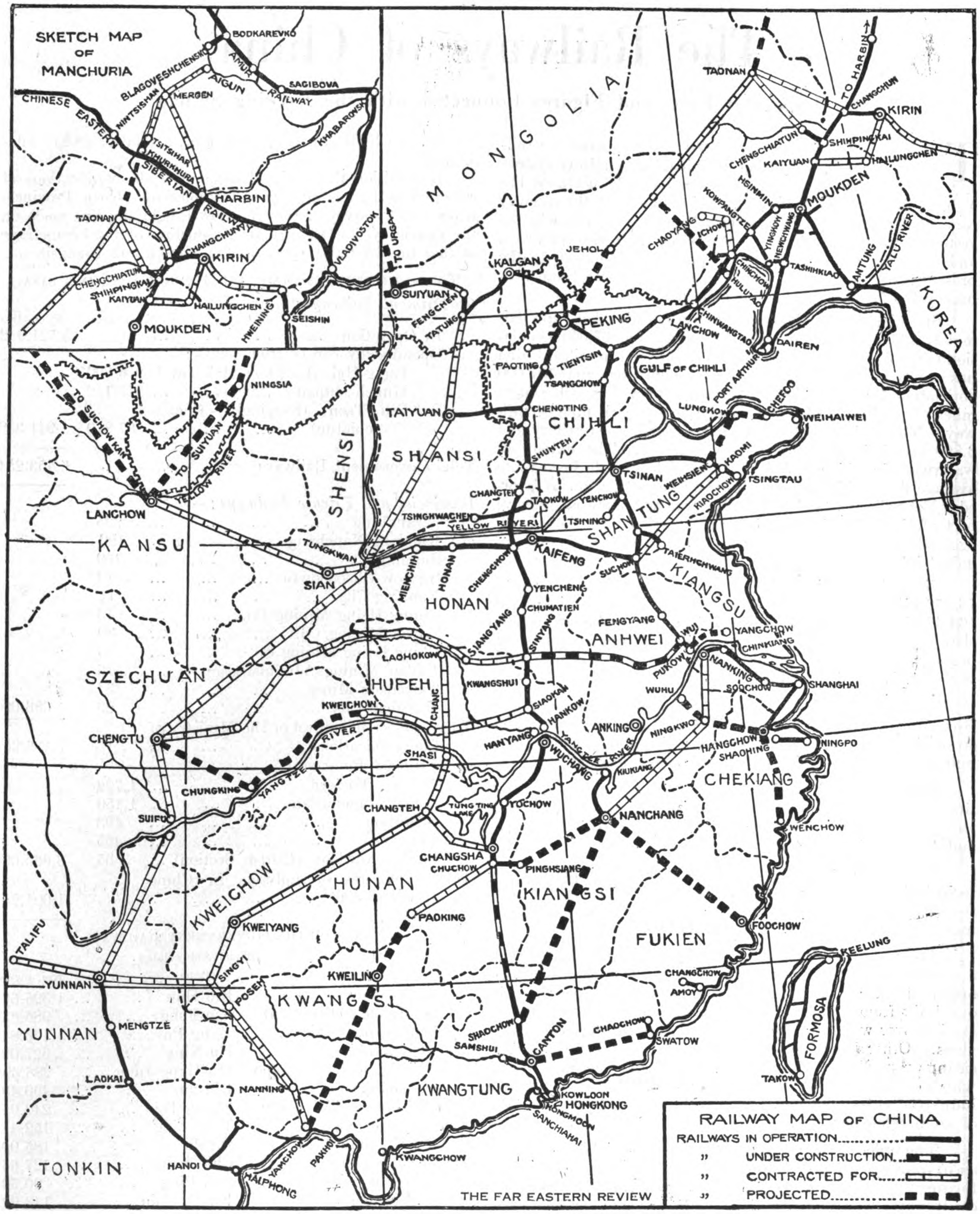
	Kilometres	Kilometres
Government Railways :—		
In Operation		5,521.942
Operated by construction forces :—		
Lung-Hai (Lanchow-Haichow)†	276.300	
Hupeh-Hunan	475.142	
Ssu-Tsen (Ssupingkai-Chengchiatun)	87.870	941.312
Total Government Railways		6,453.254
Provincial and Private Railways :—		
Kwangtung	225	
Kiukiang-Nanchang	129	
Sunning	109	
Swatow-Chaochowfu	42	
Nanking City	11	
Chung Hsing Mining Co.	43	
Tayeh Mining Co.	30	
Ching Hsing Mining Co.	15	
Kailan Mining Administration ...	16	
Taiyaokou Mines	34	
Tsitsihar City	29	683.000
Total subject to control of the Ministry of Communications		7,136.254
Concessioned Railways :—		
Chinese Eastern	1,722	
South Manchurian	1,150	
Shantung	493	
Yunnan	465	
Canton-Kowloon (British Section) ...	35	3,865.000
Total kilometres of railways in China (Miles, 6,836)		11,001.254

NAMES OF THE GOVERNMENT RAILWAYS.

Termini	Official Abbreviated Name	Km. owned
Peking-Hankow	Kin-Han ...	... 1,305.671
Peking-Mukden (Fengtien)	Kin-Feng ...	... 986.650
Tientsin-Pukow	Tsing-Pu ...	... 1,106.840
Shanghai-Nanking	Hu-Ning ...	... 327.098
Shanghai-Hangchow-Ningpo	Hu-Hang-Jung	... 286.398
Peking-Suiyuan	Kin-Sui ...	... 490.493
Shihchiaochuang-Taiyuanfu	Cheng-Tai ...	... 242.950
Taokow-Chinghua	Tao-Ching ...	... 152.453
Kaifeng-Honanfu	Pienlo ...	... 185.000
Kirin-Changchun	Chi-Chang ...	... 127.669
Chuchow-Pinghsiang	Chu-Ping ...	... 90.500
Canton-Kowloon	Kuang-Chiu	... 143.296
Canton-Samshui	Kuang-San ...	... 49.923
Changchow-Amoy	Chang-Hsia ...	... 28.000

* See description in FAR EASTERN REVIEW, November, 1919.

† See description in FAR EASTERN REVIEW, November, 1919.



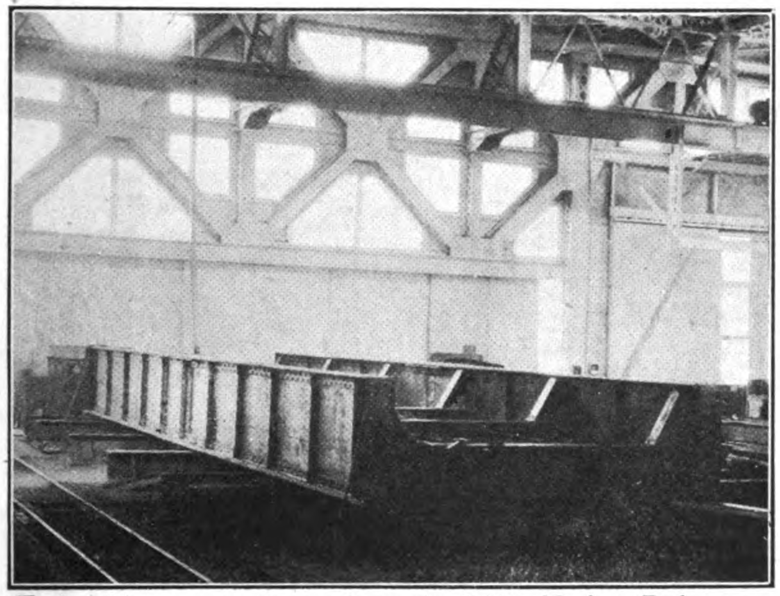
Map of Railways already Contracted for in China

This map is designed to show the relation of railroads already contracted for with those at present in operation in China. It must be pointed out that while the continuation of the line (the Lung-Hai) passing through Kaifeng eastwards, and shown as ending at Suchow, in Kiangsu Province, is not given on the map, it will probably go to some point on the Yangtze River. Originally it was designed that the terminal should be on the seacoast at Haichow, but surveys have shown that it would be better, if politically possible, to abandon that place and take the line southwards to the Yangtze to Nan Tungchow, or some port thereabouts. Tungchow is situated on deep water sufficient to float large ocean-going steamers, and naturally would form a very desirable terminal. To make Haichow possible as a port would require the expenditure of a great sum of money.

The Railways According to Provinces

The following is the measurement in kilometres of railway owned, classified by use and distributed by Provinces :—

Chihli Province Main Line, 1,437.790 km.; Branch Lines, 211.090 km.; Second Track, none; Loops, 212.891 km.; Sidings, 316.587 km.; Industrial Lines, 21.520 km. Total, 2,199.878 km.



Typical 15-metre span for repairs on the Peking-Hankow Railway, as erected in Ambrose Shops, U.S.A., of the United States Steel Products Company

Honan Province : Main Line, 905.707 km.; Branch Lines, 2.446 km.; Second Track, none; Loops, 94.598 km.; Sidings, 85.967 km.; Industrial Lines, 6,962 km. Total, 1,095.680 km.

Kiangsu Province : Main Line, 488.531 km.; Branch Lines, 16.093 km.; Second Track, 3.685 km.; Loops, 33.892 km.; Sidings, 97.092 km.; Industrial Lines, none. Total, 639.293 km.

Shantung Province : Main Line, 422.291 km.; Branch Lines, 72.130 km.; Second Track, none; Loops, 39.091 km.; Sidings, 50.678 km.; Industrial Lines, 4.941 km. Total, 589.131 km.

Shengking (Manchuria) Province : Main Line, 426.840 km.; Branch Lines, 91.967 km.; Second Track, none; Loops, 30.450 km.; Sidings, 79.437 km.; Industrial Lines, none. Total, 628.694 km.

Shansi Province : Main Line, 328.905 km.; Branch Lines, 19.568 km.; Second Track, none; Loops, 46.261 km.; Sidings, 27.739 km.; Industrial Lines, 5.009 km. Total, 427.482 km.

Anhwei Province : Main Line, 280.622 km.; Branch Lines, none; Second Track, none; Loops, 19.521 km.; Sidings, 23.367 km.; Industrial Lines, none. Total, 323.510 km.

Chekiang Province : Main Line, 203.115 km.; Branch Lines, 5.665 km.; Second Track, none; Loops, 19.988 km.; Sidings, 25.492 km.; Industrial Lines, none. Total, 254.260 km.

Kwangtung Province : Main Line, 192.220 km.; Branch Lines, none; Second Track, 18.025 km.; Loops, 11.619 km.; Sidings, 12.712 km.; Industrial Lines, none. Total, 234.576 km.

Hupeh Province : Main Line, 170.793 km.; Branch Lines, none; Second Track, none; Loops, 30.475 km.; Sidings, 27.969 km.; Industrial Lines, 5.281. Total, 234.518 km.

Kirin (Manchuria) Province : Main Line, 127.669 km.; Branch Lines, none; Second Track, none; Loops, 5.890 km.; Sidings, 20.229 km.; Industrial Lines, none. Total, 153.788 km.

Hunan Province : Main Line, 56.300 km.; Branch Lines none; Second Track, none; Loops, 2.370 km.; Sidings, .520 km.; Industrial Lines, none. Total, 59.190 km.

Kiangsi Province : Main Line, 34.200 km.; Branch Lines, none; Second Track, none; Loops, 6.390 km; Sidings, 1.190 km.; Industrial Lines, none. Total, 41.780 km.

Fukien Province : Main Line, 28.000 km.; Branch Lines, none; Second Track, none; Loops, none; Sidings, 3.535 km.; Industrial Lines, none. Total, 31.535 km.

Grand Total : Main Line, 5,102.983 km.; Branch Lines, 418.959 km.; Second Track, 21.710 km.; Loops, 553.436 km.; Sidings, 772.514 km.; Industrial Lines, 43.713 km. Total, 6,913.315 km.

This property has been acquired partly by investment of Government funds and partly by means of loans. The amounts under each category as well as the changes during 1918 are shown as follow :—

Liability	Amount	Increase	Decrease
Permanent Government Investment	$115,959,282.70	$2,079,190.68	—
Additions to property through Surplus	28,186,795.51	3,967,487.08	—
Funded Debt Retired through Surplus	15,674,655.03	1,617,810.75	—
Total Government Equity ...	$159,820,733.24	$7,664,488.51	—
Shares	$3,906,787.33	—	$8,857.15
Mortgage bonds	264,156,938.41	—	2,550,832.22
Other Secured liabilities	14,183,051.66	—	368,098.16
Non-Government Equity ...	$282,246,777.40	—	$2,191,591.21

Sino-British Mining Enterprise for North Shansi

The coal fields of Tatung, in the north of Shansi Province, which we mentioned in an article on "Opening China's Great North West," in the November issue of the FAR EASTERN REVIEW, as of great potential value in the development of railway and industrial effort in this tremendous region, are to be investigated under an agreement between the Kailan Mining Administration and the Governor of Shansi Province, General Yen Hsi-san. The agreement was signed by Major W. S. Nathan, C.M.G., on behalf of the Kailan Mining Administration and provides for joint exploitation of the field with the Shansi Provincial Government.

This is an important step inasmuch as it opens the way for the introduction of modern mining methods in a region where there is believed to be an abundance of high quality coal and bordering on a territory which will be a great user of coal in the future when colonization plans are carried into effect and when the railway extensions across the Gobi are made.

At present coal is mined by natives in the hills near Tatung and is used on the railway and carried for sale on the Peking market. In order to give facilities for getting the coal from the mines to the market the Peking-Suiyuan Railway authorities built a branch line to Kaochuan. Coal is got out by the Chinese, on the slope and step system and is bituminous. It is of the middle Jurassic period and is said to be amongst the best of its kind in China, making good coke suitable for smelting.

The future of this new enterprise will be watched with great interest, especially as China is now on the verge of a great industrial era.

Railway Progress in China in 1919

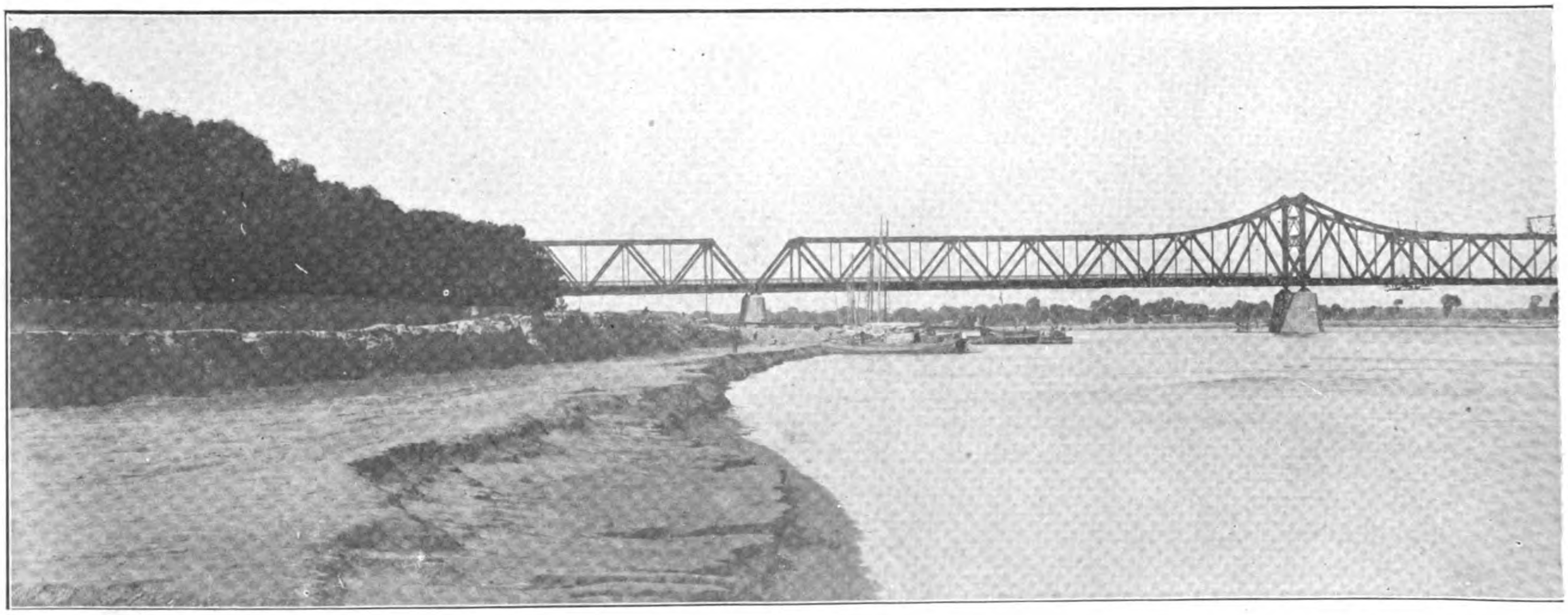
Last Year shows Advancing Earnings and Many Administrative Improvements, including the Appointment of Foreign Technical Advisers to Effect Standardization of Rolling Stock, etc.

THE September number of The Far Eastern Review contained a summary of the Statistical Report issued by the Ministry of Communications covering the operations of the Government railways during the year 1917. In the course of that review, attention was called to the fact that the Ministry seemed to be making progress toward getting out its reports promptly and said "It will be interesting to see if the process of catching up with the calendar will be fast enough to bring out the report for 1918 before the end of the current year." The Ministry has answered this challenge by producing the report for 1918 not only before the end of the year 1919, but a good full month before the end. To be exact, a copy was delivered at our Peking office on the 27th of November. Thus within less than eleven months after the close of the fiscal year to which it refers, this report is in the hands of the public. As many of the lines do not close their books until about five months after the close of the year, the preparation of this considerable volume has been accomplished in less than six months. These results compare favorably with those in any foreign country, especially when it is taken into consideration that the press work has been done entirely by native printers. The latter consideration in itself is one of some moment, and the entire performance is a splendid illustration of what can be done in China, if to patience there be added perseverance, and to perseverance there be added a willingness to profit by past experience. The first report to cover a full year's operations was for the year 1915. It appeared two years and seven months after the close of 1915. The report for 1916 appeared two years and three months after the close of 1916. The report for 1917 appeared one year and seven months after the close of 1917, and now the 1918 report, circulated within eleven months after the close of that year, brings the series up-to-date and on time. To do this, the Ministry has brought out three reports during the calendar year 1919. This is a record feat and one which reflects great credit upon the administration. If all branches of the Chinese Government service will do their work with the promptitude and the evident precision which marks the work of the statistical division of the Ministry of Communications, things will be in a fair way in China while some of us are still alive to behold it.

The general results for the year 1918 were given on page 783 of the December number of the Far Eastern Review. For the sake of completeness and continuity some of them are repeated here.

	1918	1917	Increase.	Decrease.
Operating Revenues	$77,652,152.95	$63,873,703.67	$13,778,449.28	—
Operating Expenses	34,322,615.12	30,040,564.50	4,282,050.62	—
Net Operating Revenues ...	43,329,537.83	33,833,139.17	9,496,398.66	—
Income Debits ...	11,033,562.00	13,303,440.24	—	$2,269,878.24
Income Credits ...	1,209,143.74	1,100,496.79	108,646.95	—
Net Income Debits	9,824,418.26	12,202,943.45	—	2,378,525.19
Surplus for the year	$33,505,119.57	$21,630,195.72	$11,874,923.85	—

In explanation and analysis of the results epitomized in this condensed statement the report contains 84 pages of "text," 40 "tables" and 9 colored or graphic diagrams. One of the most commendable features of the text is the apparent willingness to admit the unfavorable features of the situation as well as the favorable. This will do more to gain confidence in Chinese statistical reports than the publication of the report itself. Furthermore, it leaves the administration in a perfectly defensible position. If railway management were already perfect, there would be no excuse for wasting money in unifying accounts, statistics, and practice. But everyone knows that administration is not perfect, no more



Bridge over the Yellow River near Tsinanfu which carries the track of the line from Tientsin to Pukow. The bridge

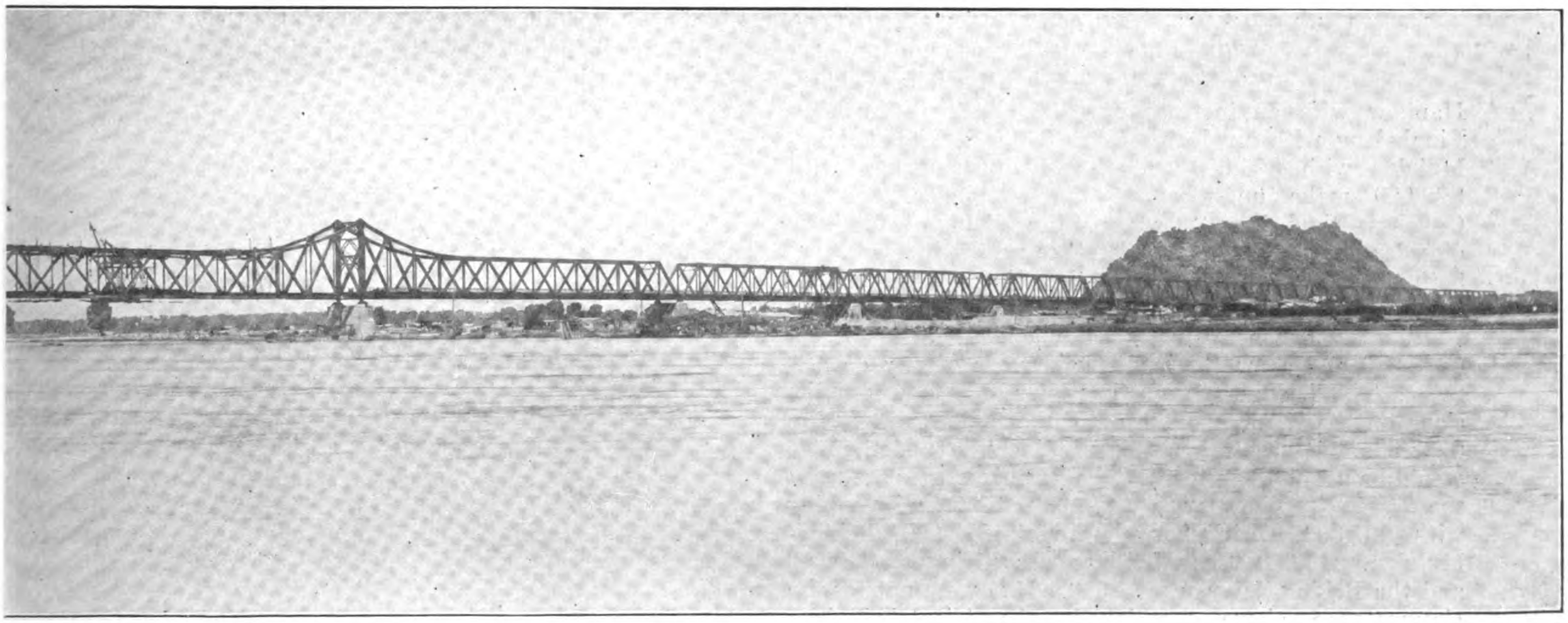
in China than elsewhere, and the acknowledgement of faults, therefore, does not in any way imply an apology by the administration. Rather it is an earnest of improvements which are to be expected. Also, the disposition to claim credit for every lucky incident has been successfully resisted. A good evidence of this is to be found in the explanation given for the unusual increase in Operating Revenues, an increase of over 20 per cent. Says the report, page 2 :

> These results are abnormally favorable. The revenue for the year is larger by perhaps $2,000,000 due to the fact that interruptions in service due to floods in 1917 left considerable traffic unmoved in 1917 which added to the business of 1918. The loss of this traffic in 1917 makes the contrast again more conspicuous. Exceedingly favorable weather in 1918 also enabled the several lines to realize all the possibilities of traffic during the year. Allowance should be made for these factors in gauging the prospects for the coming year and in calculating the normal increase in business. Nevertheless, the year gives a gratifying demonstration of the capacity of the lines composing the Government property and of the fundamentally sound conditions underlying business in the territory served.

And again on page 24 :

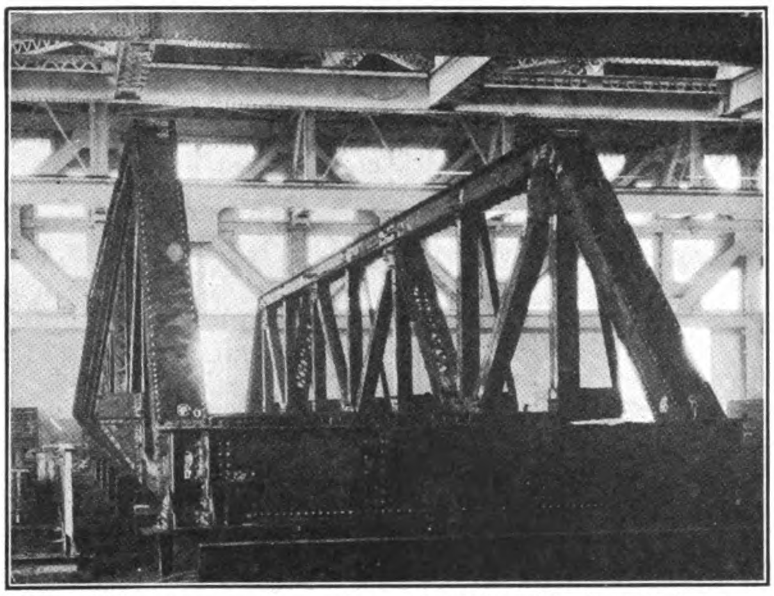
> These revenue figures contain $5,789,737.84 for the carriage of Government passengers and goods—mostly military. This is an increase of $2,832,143.44 in Government service over the year before. In addition there was an increase in revenue from service stores and from material for other Railways of $254,675.79 and $132,244.83 respectively. If these items be subtracted from the total increase in revenue, the gain from commercial sources is $10,559,378.22. Of the $77,652,152.95 gross revenues for the year, Government traffic of $5,789,737.84, is not collected in cash but is cared for by bookkeeping transfers between the lines and the Government. Similarly revenue from the carriage of service stores is a debit to the expenses and a credit to the revenue of the same line. Revenue from the haul of materials for other railways is credited to one line but is debited to another, so that the real cash transactions of the combined lines are not enhanced thereby. Combining these two items, $1,533,176.37 and $336,937.75 respectively with Government traffic revenue, above noted, and a total of $7,659,851.96 is in fact not collected by the railway in cash. This is not to be confused with services rendered by the railways to the Department of Posts for which only a nominal charge is assessed, nor for services rendered to the military by way of housing troops in wagons for which nothing is assessed. Subtracting these bookkeeping transfers from the total revenue reported leaves $69,992,300.99 commercial revenue compared with $59,432,915.77 in 1917—yielding an increase of nearly 18 per cent.
>
> Unfortunately, this gratifying evidence of the growth of railway service does not at the same time accurately measure the financial benefits which the Government derived from the ownership of these railways. Conditions over which this Ministry had no control made it seem prudent to accept upon certain lines bank notes of depreciated value in payment of services rendered. Just what allowance should be made in the nominal total revenue reported above, is difficult to estimate.

However, according to page 46 of the report the discount on depreciated currency was $1,200,000 less than during the preceding year—the 1918 figure being $965,744.85. Of course, as the report admits " There remained in the possession of the lines at the close of the year a considerable amount " of such notes, upon which the losses will be recorded during the year in which the loss occurs. But on pages 49 and 55, depreciated notes on hand amounted to $2,000,000 among cash and $6,940,000 compared with $11,000,000 in cash and over $1,000,000 in special funds at the end of 1917. On page 20 of the report it is stated that some $12,400,000 of depreciated notes were disposed of during the year in the purchase at par of Government bonds. It thus appears that practically all of such notes on hand at the beginning of 1918 were disposed of at par for bonds, and that the notes on hand at the end of the year, plus those disposed of at a discount, as evidenced by discount on depreciated currency, approximates the amount collected during the year. Assuming a discount of fifty per cent. on those disposed of yields nearly $2,000,000 par value, this added to the $8,940,000 in cash and special funds shows that practically $11,000,000 were collected during the year. Again using the discount of 50 per cent., we may say that $5,500,000 should be deducted from the returns of the year in order to put them in " hard cash " terms.



is 4,180 feet long, and is built on eleven piers. A full description appeared in THE FAR EASTERN REVIEW of October, 1912

Even this leaves a splendid increase of real earnings over the year before, assuming that the 1917 figures represent nothing but silver—which was not the case by any means. In fact 1918 saw considerable progress toward restricting the use of inconvertible notes on the government lines.



Typical 30-metre span for repairs on the Peking-Hankow Railway, as erected in Ambrose Shops, U.S.A., of the United States Steel Products Company

Operating expenses are analyzed in fifteen pages of text, a condensation of which may be given as follows :

Department.	Expense. 1918	Expense. 1917	Increase. Total.	Increase. Per cent.
General	$6,286,749.01	$5,644,587.63	$642,161.38	11
Traffic	4,302,860.07	4,025,087.46	277,772.61	6
Running	8,268,194.22	6,671,754.47	1,596,439.75	24
Maintenance of Equipment	6,917,142.38	6,308,790.08	608,352.30	10
Maintenance of Way ...	8,262,909.25	7,236,697.53	1,026,211.72	14
Interchange of Rolling Stock	284,760.19	153,647.33	131,112.86	85
Total Operating Expenses	$34,322,615.12	$30,040,564.50	$4,282,050.62	14

The increase under General is evenly divided between the two parts, Administration and Special. The increase under Administration is $321,000. Of this $105,000 came from the Peking-Suiyuan line—$85,000 of which occurred under the head "Direction." The Peking-Hankow with an increase of $105,000, the Chuchow-Pinghsiang with an increase of $43,000, the Peking-Mukden with $35,000 and the Kirin-Changchun with $22,000 make up most of the remainder, On the Chuchow-Pinghsiang "Loss on Stores" (due to military disorders) as well as "Direction" cause the increase. On both the Peking-Suiyuan and the Chuchow-Pinghsiang "Direction" expenses increased nearly fifty per cent.

Traffic expenses increased upon all lines nearly $278,000 and show the smallest increase of any department. This is due to the cutting down of agency commissions on the Tientsin-Pukow to the extent of nearly $297,900. Except for this the increase under traffic would be about 13 per cent. The large increases are upon the Peking-Hankow with $170,000, Shanghai-Nanking with $87,000, Kirin-Changchun with $79,000, Peking-Mukden, $40,000, Shanghai-Hangchow-Ningpo, $40,000 and the Peking-Suiyuan, $32,000. If it were not for the circumstance above mentioned, the Tientsin-Pukow would show an increase of $100,000 but as it is this line shows a decrease of $196,000.

Running expenses increased $1,596,000—in round numbers—or 24 per cent. When it is remembered that ton kilometres increased no more than 24 per cent. and that passenger kilometres increased only 9 per cent., this increase in running expense is seen to be out of proportion.

Considering the subject by sub-divisions, locomotive expense, that is fuel and wages of enginemen, principally made up $1,408,000 of the increase. The increase in the price of coal upon the Shanghai-Nanking, the Shanghai-Hangchow-Ningpo and the Canton-Kowloon will be found to explain in large part the increase in this head beyond what would be expected from the increase in traffic hauled.

The expense of maintaining the equipment of the government lines in 1918 was $6,308,790.08, which is an increase over 1917 of $608,000, in round numbers. The total includes $1,777,421.89 depreciation charges, which is some $60,000 less than similar charges in 1917.

Maintenance of way expense in 1918 amounted to $7,236,000, in round numbers. This is an increase of $1,026,000, of 14 per cent. over the year before. The lines with large increases are the Tientsin-Pukow with $564,000, the Shanghai-Nanking with $105,000, the Peking-Mukden with $103,000, Kaifeng-Honan, $97,000, Kirin-Changchun, $97,000, Peking-Hankow, $90,000. The Shanghai-Hangchow-Ningpo shows a decrease of $55,000. These increases are quite generally due to replacement of sleepers. This is true of the Tientsin-Pukow, Kirin-Changchun, Kaifeng-Honan, and Peking-Mukden. The Tientsin-Pukow also had a large increase under extraordinary, due to floods of the year before, as did also the Peking-Hankow. The Peking-Hankow had a considerable decrease under sleepers, but this is partly overcome by large increases in superintendence, watchmen, station buildings and staff quarters. The Shanghai-Nanking shows its increases under station buildings and maintenance of wharves. The Shanghai-Hangchow-Ningpo shows its decrease principally under sleepers.

The increase under Interchange of Rolling Stock was entirely upon the Tientsin-Pukow.

Not only does every department of expense show an increase over 1917, but every line considered separately shows a similar increase—even the lines which show decreases in business. The principal increases by lines, are on the Peking-Hankow, $976,000, the Tientsin-Pukow, $956,000, the Shanghai-Nanking, $766,000, Kirin-Changchun, $321,000, Peking-Suiyuan $311,000 and Shanghai-Hangchow-Ningpo, $305,000.

With an increase of Operating Revenues of 22 per cent. and in Operating Expenses of only 14 per cent., one is prepared for a considerable improvement in the already low operating percentage of "Ratio." By lines this was as follows :

OPERATING PERCENTAGE BY LINES, 1918 AND 1917.

	Name of Line.	1918	1917
1.	Peking-Hankow	33.1	37.4
2.	Peking-Mukden	33.5	38.4
3.	Shihchiachuang-Taiyuan (Cheng-Tai) ...	41.7	50.8
4.	Taokow-Chinghua	44.9	41.3
5.	Tientsin-Pukow	50.2	50.9
6.	Kaifeng-Honan	55.4	46.3
7.	Kirin-Changchun	60.5	69.7
8.	Shanghai-Nanking	61.1	52.8
9.	Peking-Suiyuan	65.1	68.5
10.	Shanghai-Hangchow-Ningpo	86.2	81.2
11.	Chuchow-Pinghsiang	99.6	82.3
12.	Canton-Kowloon	112.9	104.6
13.	Changchow-Amoy	187.5	159.5
	Chinese Government Railways	44.2	47.0

The performance of the combined lines is markedly better than in 1917. This is due almost wholly to the improved records on the Peking-Hankow and the Peking-Mukden, both of which show a very low percentage. The improvement upon the Cheng-Tai and the Kirin-Changchun are equally satisfactory but the volume of business upon those lines is not sufficient to effect the general average to any great extent. The poorer record upon the Kaifeng-Honan, the Shanghai-Nanking and the Shanghai-Hangchow-Ningpo is a matter of some concern and in the case of the latter two lines was due in considerable part to the exhorbitant prices paid for coal. The Peking-Suiyuan shows a better figure than in 1917, but is still behind its record of earlier years.

The Peking-Hankow holds its customary place at the head of the list, but it is so closely pressed by the Peking-Mukden that if Peking-Hankow rates were reduced to Peking-Mukden levels, their positions might be reversed. The effect of rate levels, has a pronounced effect upon operating percentage. A high rate is as effective as low expense in keeping the percentage low, provided, of course, that the rates still permit a full flow of traffic.

The increase in net operating revenue, given above, is not far short of 30 per cent. For the combined lines it is equivalent to 10.4 per cent. upon all investment assets, compared with 8.2 per cent. in 1917. Net operating revenues per kilometre of line amounted to $7,921 silver. This is especially significant, now that the silver dollar is worth as much or more than the gold dollar, when comparison is made with similar earnings in other countries. Pre-war earnings in such countries as England, Germany, and the United States were respectively $6,655, $4,150 and $2,442 per kilometre of line. While in Australia, Canada, India and Japan, they were respectively, $1,076, $1,579, $1,784, and $3,413 per kilometre of line. Even if one were to assume the old 2 for 1 rate of exchange the Chinese Government railways are seen to be among the most profitable in the world.

The largest income debt item is interest on funded debt. It amounted to $8,547,500.54 compared with $10,555,727.51 in 1917. This is a decrease of $1,508,226.97—due in part to a reduction in funded debt on certain lines, but due principally to the more favorable rates of exchange. Practically all interest on funded debt must be paid in foreign money which is on a gold basis. The increasing price of silver, which is the Chinese standard, therefore makes the purchase of the gold for interest payments correspondingly less. In effect, the favorable rates of exchange bring about a reduction in interest rates. The amount paid in 1918 is 3.07 per cent. on the funded debt and other secured indebtedness outstanding at the end of the year.

If all interest, rents, taxes, and similar income debit items were to be totalled, it would be found that for every dollar of such debits there were over four dollars of net revenues and other income credits to meet it.

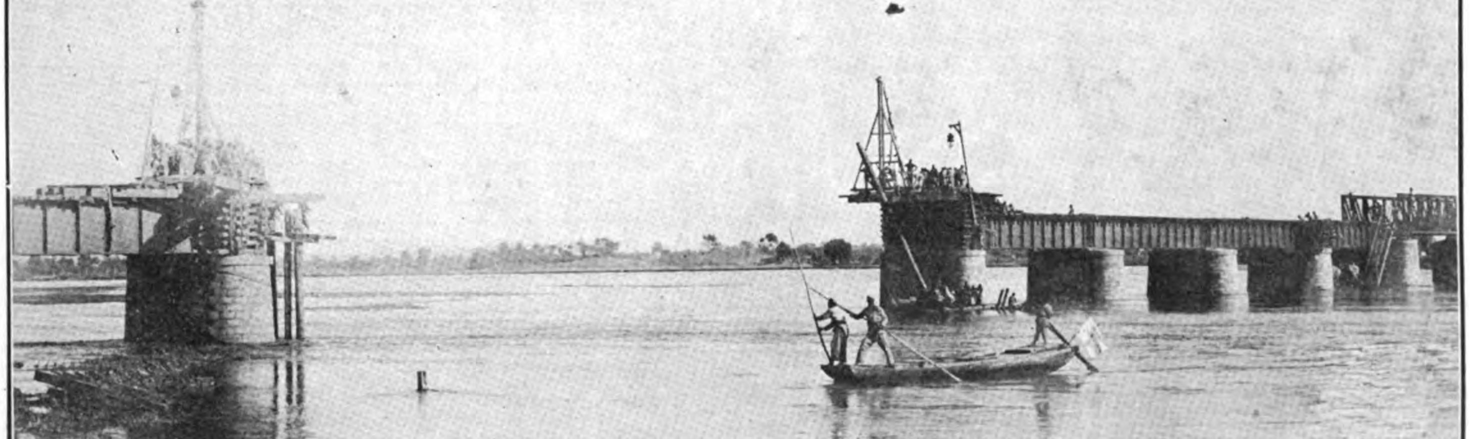
The credit balance for the year—often called surplus for the year—was $33,505,119.57. It would permit the payment of interest charges a second and a third time and still leave a balance much larger than the balance in 1915 —the first year under the uniform classification of accounts.

The Government owns a considerable equity in these properties. What profit do they pay upon this investment? On December 31, 1918, this permanent Government investment of the reporting lines stood on the books at $114,169,300. At five per cent., the annual interest charge would be $5,708,465. Thus after allowing for this reasonable return upon permanent Government investment, there would remain out of the balance of $33,505,120 a clear profit of $27,796,655. Or if it be put the other way, the balance stated above is 29 per cent. upon permanent Government investment.

Under such encouragement it is not unexpected that the Government is rapidly increasing its investment in these lines of railway. It is accomplishing this in several ways—by the repayment of loans, by additions to the property out of earnings, and by choosing to regard as permanent investment sums which hitherto had been considered as temporary advances only. The Government now owns over one-third of the total investment in these lines. The amount and the changes during the year are shown in the following statement taken from page 6 of the report :—

Liability.	Amount.	Increase.	Decrease.
Permanent Government Investment	$115,959,282.70	$2,079,190.68	—
Additions to property through Surplus	28,186,795.51	3,967,487.08	—
Funded Debt Retired through Surplus	15,674,655.03	1,617,810.75	—
Total Government Equity	$159,820,733.24	$7,664,488.51	—
Shares	$3,906,787.33	—	$8,857.15
Mortgage bonds	264,156,938.41	—	2,550,832.22
Other Secured liabilities ...	14,183,051.66	$368,098.16	—
Non—Government Equity	$282,246,777.40	—	$2,191,591.21

A further useful and interesting feature of the report is the comparison given in the tables with the results of previous years, beginning in 1915 when uniform statistics were first available. From one of these we learn that passen-



A Breach made by Floods in the Hsinloho Bridge on the Peking-Hankow Railway

ger kilometres have increased during the four years from 1,900,000,000 to 2,300,000,000 or something over 20 per cent. This, of course, is only a moderate increase. But from another table we find that ton kilometres from 2,250,000,000 to 3,425,000,000 or over 50 per cent. This is a rate of increase fully equal to that in the United States during that unusual decade of expansion between 1900 and 1910. When it is remembered that this increase has taken place during years when it was impossible to purchase new equipment, and that the carrying capacity of equipment during this period has actually increased less than 4 per cent., one begins to appreciate the enterprise and energy of operating officials in meeting the emergency and to speculate on what the increase in goods traffic might have been, had there been no shortage of wagons.

Speaking of equipment, the report shows that seven new locomotives were added on the Peking-Mukden and Peking-Suiyuan lines during 1918 and that 200 goods wagons, leased under the notorious Hsu Shih-ying agreement, were received by the Tientsin-Pukow. The performances of all of these forms of equipment were much in excess of the figures of the year before.

The report for 1918 is properly reviewed in an estimate of the year 1919, not only because of the fact that it appears in the latter year, but also because it furnishes the background against which any picture of 1919 must be sketched.

What of revenues in 1919? These may be approximated in several ways. The first of these is to arrive at a normal annual increment. This may be fixed upon by comparing the revenues of previous years, as follows :

	Revenue.	Increase.
1915	$57,063,000	—
1916	62,762,000	$5,699,000
1917	63,874,000	1,112,000
1918	77,652,000	13,778,000

From the above it is quite apparent that as yet there is no "normal" annual increase. The fluctuations are too violent. As has been stated before, the floods in 1917 reduced that year's earnings far below what they would have been otherwise, and held over traffic which boosted the 1918 figures far above what they should have been. Probably an addition of $3,000,000 to the 1917 figures and a subtraction of that amount from the 1918 results would put the matter about right. Even then, the results would leave the increase of 1918 over 1917 nearly $8,000,000. However considering the other peculiarly favorable conditions in 1918, this appears quite reasonable. By reducing the 1918 revenues to a normal of about $74,500,000 we find that the increase of the three years since 1915 is about $17,500,000 or a little less than $6,000,000 per year. If this amount be added to the normal 1918 figure of $74,500,000 we arrive at about $80,400,000 as the estimated revenue for 1919—unless there are some unusual factors to take into consideration. But 1919 seems to have been quite a usual year. At least, the Peking-Hankow has been broken by high water several weeks at a time, there has been considerable military traffic, several of the smaller lines in the south have almost had to suspend from military causes, there have been local droughts, there was a cholera scare for a time, but there have been no calamities, the crop on the whole has been good, and trade has gone its way relatively unmolested. Yes, 1919 has been quite normal.

An innovation which the Railway Department of the Ministry of Communications has inaugurated during the year permits of a much closer approximation of results than has been possible hitherto. Every ten days it gives out an approximate return of traffic. This is in itself something of an estimate, but it is made for each individual line, and based upon data which is probably at least 85 per cent. actual. The last of these made public at the time these lines were written covered the nine months ending September 30. It included two lines, the Wuchang-Changsha and the Shihpingkai-Chengchiatun, which were not included in the 1918 statement of earnings. But if these be eliminated from the totals, the operating revenues at the end of September aggregated $56,789,000—or practically the same as the revenue for the entire year of 1915.

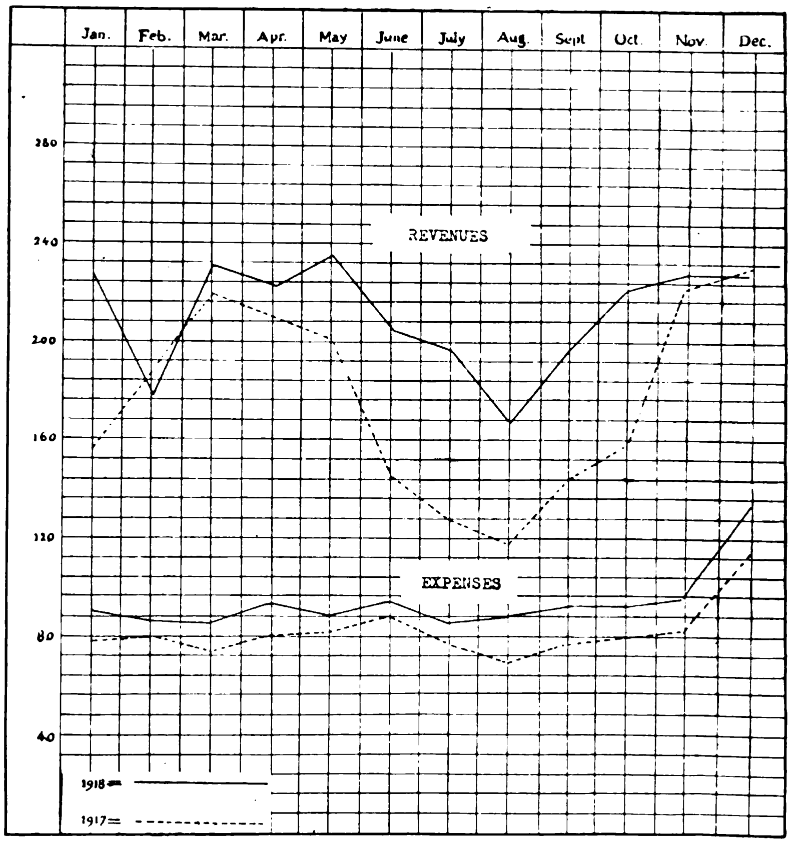
Now the remaining months of the year are the most important of all,* hence any great fluctuation during October, November and December will be fatal to any estimates for the year. But according to all reports, everything was going steady when this was written, and no large fluctuations are looked for. By taking the percentage which the earnings up to September 30 bore to the total for the year during previous years and applying that to the $56,789,000 above, we may arrive at a probable revenue figure for the year.

Year	Revenue earned up to Sept. 30	Revenue for the Year	Per cent. earned by Sept. 30
1915	$39,817,000	$57,063,000	69
1916	44,686,000	62,762,000	71
1917	45,039,000	63,874,000	70
1918	56,914,000	77,652,000	73
Four years ...	$186,456,000	$261,351,000	71

Calculated upon this basis, earnings for the year 1919 are estimated at $79,981,000—practically $80,000,000. The increase over 1918 is, therefore, only about $2,500,000. After the tremendous increase of 1918 over 1917 this may be somewhat disappointing until there is recalled the facts surrounding the increase in 1918. When these are considered, and we go back to the normal figures for 1918 for a comparison ($74,500,000), we find that the regular normal increase of between $5,000,000 and $6,000,000 is right on hand as usual.

However, the particular lines to "fall down" in revenue this year are not the lines whose earnings in 1918 were in-

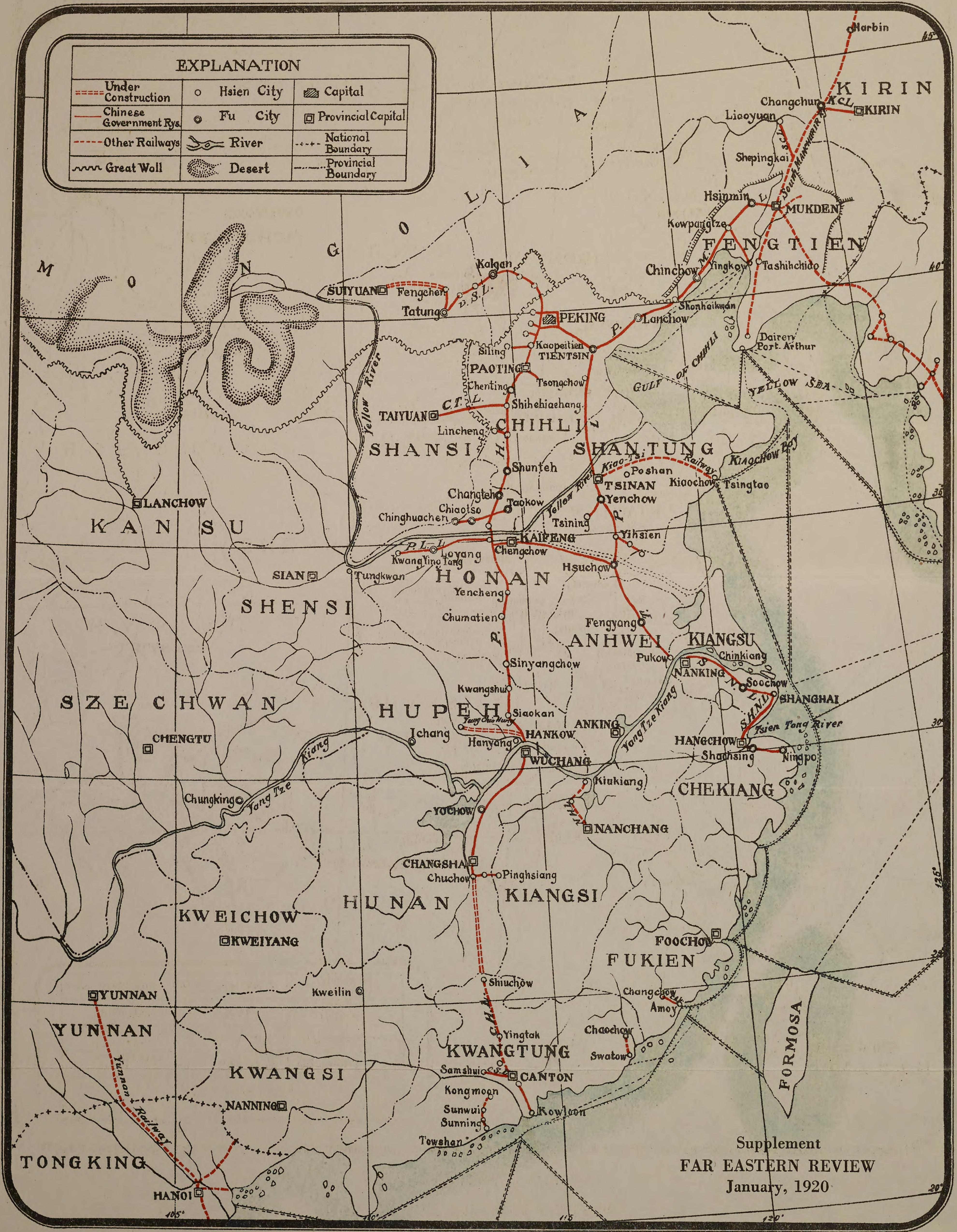
*Average Daily Operating Revenues and Expenses, by Months, Chinese Government Railways, 1917 and 1918



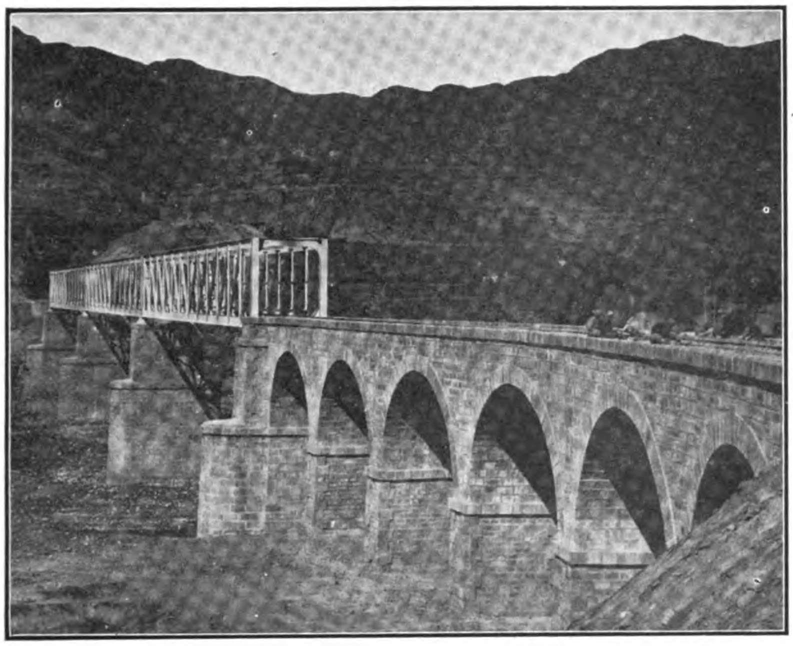
MAP OF CHINESE GOVERNMENT RAILWAYS

PREPARED BY THE DEPARTMENT OF RAILWAYS

MINISTRY OF COMMUNICATIONS.



flated by tonnage left over from 1917—that is, the Peking-Hankow and the Tientsin-Pukow. Both of these lines show a substantial increase to date over the corresponding months of 1918. The delinquents are the Peking-Mukden and the Cheng-Tai. Yet the floods are responsible, for they caused an unusual movement of grain and other foodstuffs into Chihli to take the place of supplies destroyed. This movement is absent in 1919, which accounts for the decrease on the Peking-Mukden particularly.



A Bridge over the Niang Tzi-kuan, on the line to Taiyuanfu

In view of the high earnings during 1918 and the needs of a developing traffic, budget allowances for expenses in 1919 are higher than those for 1918. In addition the prices of materials, which have been steadily mounting during the war, will have full effect during 1919, whereas in 1918 a considerable portion of the supplies consumed were those which had been purchased in earlier years before the present high levels had been attained. Although the attention of managers has been closely fixed upon the necessity of keeping expenses down to a minimum compatible with service requirements. Operating expenses in 1919 will probably exceed those of 1918 by an amount equal to the increase in operating revenues. Hence, net operating revenues will be no larger in 1919 than they were in 1918, in all probability. This is universal experience. A year of tremendous traffic scales up the standard of expense which is rarely if ever scaled down. However, the rate of exchange continues to make the cost of interest payments, which are made in gold, cheaper in terms of Chinese currency. This, together with the decreasing amount of mortgage bonds outstanding will probably result in a further decrease in interest charges by nearly a million dollars. Hence in the final balance for the year, we shall find probably a million dollars more, than in 1918—or about $34,500,000.

The final balance for the year will be much better than that for 1918 in another respect—it will not contain nearly so large a proportion of inconvertible notes. During the year 1918 there was little restriction to their use upon the four big lines—the Peking-Mukden, the Peking-Hankow, the Tientsin-Pukow, and the Peking-Suiyuan these lines received practically all of their passenger revenue in these notes, as well as certain other revenues. During 1919 the Peking-Mukden has collected all of its revenue in silver, the Tientsin-Pukow has done similarly since April 25, and since July 16 the Peking-Hankow and Peking-Suiyuan lines have reduced the acceptance of notes to local fares and local baggage charges only.

Up to the present, reviewers of railway progress have invariably apologized for the state of railway administration in China by diverting attention to the fact that in the face of all the discouraging conditions, such as military operations, demoralized currency, banditry, plagues and inefficiency of administration, railway earnings were steadily growing—indicating a fundamentally healthy condition of the Chinese people. The year 1919 marks a change, which let us hope is permanent. It is the increase in earnings, if anything, which would be particularly criticized this year. But that is quite satisfactory, while the signs of progress in administration are very clear.

On the Peking-Suiyuan line a few miles of actual construction has been effected. Provisions have been agreed upon for an extension of the Taokow-Chinghuachen line southward to the Yellow River, and arrangements have been made for a resumption of work on the Canton-Hankow line. The Peking-Mukden, Peking-Hankow, and the Taokow-Chinghuachen lines have made comparatively large purchases of locomotives and goods wagons, some of which have arrived.

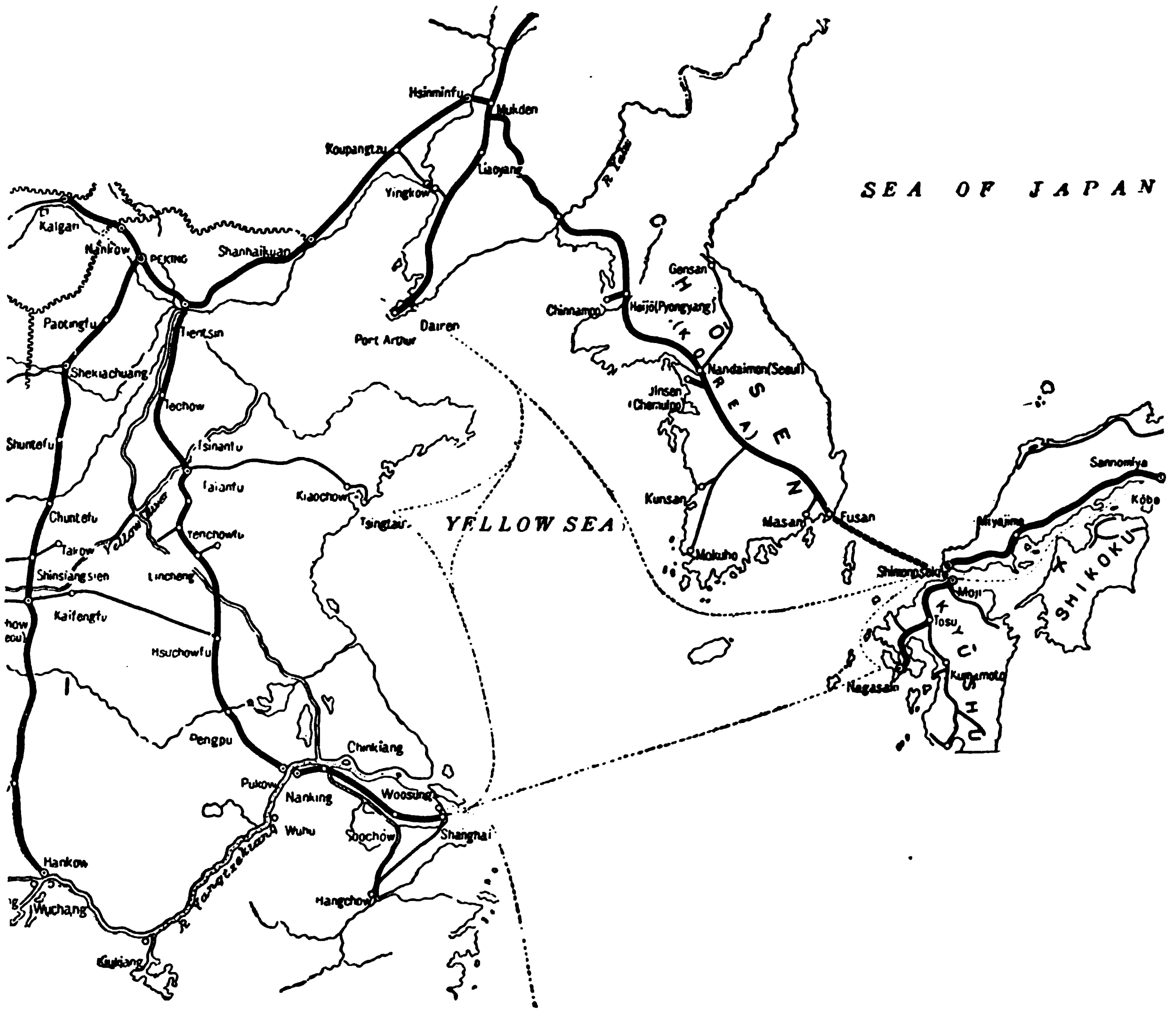
Early in the year, the Standing Committee of the accounting officers formulated a system of accounts and drew up standard forms to be used in all the stations upon the Chinese Government railways. By the use of these forms and uniform rules, it will be possible to transfer station masters and station clerks from one line to another without putting them through a preliminary course of instructions. It will permit of supervision of the management of the different lines, without loss of time. And what is more important, it will permit of supervision of the management of the different lines, by inspectors from the Ministry, which at present is impossible because each line has a different system of its own. This work is fundamental of course to the standardization of audit procedure in head offices, which is desirable in order to permit of efficient supervision from the Ministry. Due to the tedious work of correcting proofs of the forms and rules governing, and to the necessity for translation from English, in which the system was drawn, into Chinese and French, this system of station accounts has not yet been promulgated. But it is only a matter of a few weeks before this will be done. The next subjects to be considered by the accountants are the standardizing of store accounts and the accounts of engineers on construction. Sub-committees have been formed which are expected to report during the coming year.

The Traffic Managers of the Government railways also took a very important step toward welding the several lines into a real Government system—two steps, in fact. The first of these was to adopt rules for the general interchange of goods wagons. For some time, the Ministry of Communications had been urging the various lines to compose their divergent views sufficiently to permit of this, but had always encountered such a statement of difficulties to be met with that no action was taken. Several of the lines had made arrangements with their immediate connections for a limited amount of interchange, but if the shipments were billed to more than a hundred miles, say, beyond the junction point, transhipment was required. The present arrangement falls far short of effecting an actual " pool " of goods wagons, and, therefore, defeats in a degree the Ministry's aim to eliminate all unproductive empty haul as well as its desire to transfer wagon supplies at will according to the fluctuating demands for space upon the different lines. But the new rules do eliminate transfer at junction points, thus cutting down wagon detention, and the expense to shippers of the labor and damage due to transfers. Furthermore, the rules will reduce a certain amount of empty haul, for they permit of the equalization of wagon supply by the delivery of equivalent

capacity rather than of the particular wagon, provided that no wagon is to remain away from its " home " line more than 12 days. The interchange records are to be kept by the Clearing House in the Ministry of Communications, and settlements between the different lines will be effected through the same bureau.

In a supplementary session, the Traffic Managers drew up a uniform classification of goods to be followed for through traffic purposes. This is a work of considerable moment, for up to the present, each line had devised its own classification. It is understood that the new classification is much further refined and more complete than any of the former classifications. Whereas no line in the past had recognized more than five hundred commodities in its classification, the through classification lists at least fifteen hundred. In America, under private ownership, the work of harmonizing the classifications made by individual lines was attempted so late that to date it has not been accomplished. Although a great deal has been done, three major classifications remain, and practical men have almost despaired of finally reducing these three to one. China is to be congratulated that the diverse private interests upon her railways have been brought together for the common good at this early stage of her railway history.

It is understood that plans are being made for the through-billing of goods beginning in 1921. That is, if one has a shipment at Kalgan destined to Pukow, he may load it upon a wagon at Kalgan, pay the freight charges for the entire trip in advance, and have the wagon moved direct from Kalgan to Pukow. This is the practice in all other countries having a standard gauge, but has not been possible in China. It will probably be necessary for some time yet to send a servant along with the cargo to pay *likin* charges and to protect the shipment from theft. But ways and means will be found in time to avoid this, after the preliminary work has been done. For example, on the Shanghai-Nanking line at present, there are two tariffs offered to the public, one for shipment at railway risk and the other for shipment at owner's risk. Naturally where the railway assumes the entire risk, it charges a higher rate. But the public has found the service upon that line to be so reliable and free from pilferers, that practically all the traffic now moves at owners' risk. No doubt the time will come soon when this can be done in other parts of China. Also, several of the lines have arrangements with the *likin* authorities whereby they pay a lump sum in lieu of the *likin* tax upon the goods which they carry. This sum is in effect added to the rates charged, but like any indirect tax, is not noticed, and traffic is stimulated by the freedom from *likin* interference. This doubtless can be effected in the case of through traffic. Only when it is possible to ship a crate of goods from one point in China to any other point within its borders by the mere offering of it, with the necessary freight charges, at the point of origin, will China have a satisfactory railway service. And it is this end toward which two long steps have been taken in 1919.



Map showing Through Railway Route between China and Japan

One of the most serious obstacles to the unrestricted through shipment of goods and the common use of goods wagons, is the prevalence of so many different designs of wagons, each necessitating different standards of repair, and made up of parts which are entirely different in form from similar parts of other wagons. This makes it necessary to keep a wagon close to its " home " line, in order that it may be repaired. It would be possible to keep duplicate sets of repair parts for each type of wagon upon the Government lines at each repair station. But this would necessitate a very heavy investment in such stores. Still it is feasible and is just what American railways have done to a considerable extent. But it is well known that the use of varying types reduces the efficiency of workmen in making repairs, especially the quality of the work done in repair. Hence to date, this has been considered an insuperable objection to wide interchange of rolling stock.

In order to correct this situation if possible, the Ministry of Communications has constituted a Commission on Railway Technics, which has been studying the situation for perhaps two years. This Commission has prepared designs for goods wagons which will be submitted to the mechanical officials of the several lines for criticism and adoption at an early date. To assist in making this standard as practicable as possible and to insure that no interest is denied full consideration a group of technical advisers has been engaged abroad, and these gentlemen have arrived in Peking. One of these, Mr.

T. R. Johnson, is an engineer of note, with long experience upon the railways of Australia and England. Another, Mr. Frank H. Clark, was for many years, General Superintendent of Motive Power upon the Baltimore and Ohio, the pioneer railway of America. Monsieur Taton, a professor in the Surbonne, and a mechanical engineer of note will bring to the Commission French experience. Dr. Hirai, at present Adviser to the Ministry of Communications, will bring Japanese experience.

While no official announcement has been made of plans or intentions, the common talk in Government service is that not only will rolling stock, but also signalling, roadway structures, and similar features of the service come under the purview of the Railway Technics Commission and its Advisers, to the end that the entire railway service shall be made of one standard. The procedure followed will be similar to that adopted in standardizing the accounts. That is, representatives from the different lines will meet with representatives of the Ministry and act as a legislative body. The Advisers will sit with these members and out of their experience and skill assist in reconciling the points of difference. Naturally, there will be many of these, and considerable compromise will probably result. The final conclusions will then be laid before the Minister for approval or disapproval. If approved, they become regulations, with much the same force as law.

No account of the year would be complete which did not mention the heated discussion during the early months upon the subject of "Unification." Many insisted upon using the term "Internationalization," and the emphasis upon this phase did more than any other part of the discussion to put the subject into the discard. Briefly the informal proposal was to invite the Consortium financiers to appoint a board of technical experts to assist the Ministry of Communications in administering the railways of China, provided that at the same time the Consortium group should furnish the funds and their governments should lend them sufficient political support to redeem the lines of railway now under complete foreign control, such as the Chinese Eastern, The South Manchuria, the Shantung, and the Yunnan lines. Two aims were in the minds of the promoters of the idea, (1) the recovery of undisputed control over the regions served by these lines, and (2) the complete amalgamation of all the existing lines together with lines yet to be built into a well integrated system. It was felt that the commercial future of China would be so much more attractive to the commercial nations under such conditions, that there would be some hope of securing their support to the program, which would be so advantageous to China politically. However, interests who were particularly interested in defeating China's political aspirations succeeded in making a considerable group possessing power and influence believe that it was merely a cleverly concocted scheme to wrest administration from Chinese officials, and the Government failed to adopt any positive attitude upon the question. Very soon after, came the stunning news that the Peace Conference had completely ignored all of China's claims for consideration, and the sentiment quickly arose that no administrative power of any sort is safe in any but purely Chinese hands. But there was doubtless a quickening of the feeling that China herself must make greater progress along the path of internal improvement, if she is to preserve any part of her national heritage. The presence of the Technical Advisers is an indication that China herself will push "unification" work, and thereby eliminate any further excuse for foreign interference. If this conclusion be correct, the "unification movement" has served a very useful purpose regardless of the personal animosities created, and the disappointment which many well-wishers of China feel over its apparently fruitless ending.

Scheme of Motor Highways, Canal and River Dredging for Shantung Province

General Chu Yin-kwang, the progressive Civil Governor of Shantung Province, has before the Provincial Assembly of Shantung Province a comprehensive scheme for motor highways, and a great dredging proposition calculated to give Tsinanfu, the Capital of the Province, direct connexion with the sea. The latter is the improvement of the Siaochingho, an old canal, by dredging, widening, etc., to enable it to give navigating facilities for small steamers. It is interesting to note that the scheme was once a favorite one with Japanese, who, during the time of the German occupation of Tsingtao, desired to have a port at Lungkow and direct communication with Tsinan as a means of giving them facilities for developing from Dalny an economic footing in the Province. In the FAR EASTERN REVIEW of November, 1914, Mr. George Bronson Rea went into this question in some detail, and estimated that the cost of making the waterway fit for navigation by vessels having a maximum displacement of 1,500 tons and a draft of 20 feet and providing locks, and port facilities at the mouth, would be something like $15,000,000 silver dollars, if the excavation is done by native labor. By modern machinery, dredgers, etc., he estimated that the price would be reduced—as well as the time of construction—to something like $10,800,000.

Whereas this plan was advocated by the Japanese to suit their own economic purposes, the Chinese are now planning to go ahead with the enterprise to meet their own needs, and surveys have already been completed. In a later issue we will go into the matter in more detail.

So far as motor highways are concerned General Chu contemplates linking up all the principal district and other cities, and looks forward to being able within three years' to ride in an automobile through 107 districts in a couple of days. His scheme is to build a properly constructed main road between one district and another and to connect up important cities with branch roads.

A Bureau for the undertaking of this work is now being formed, and when the Provincial Assembly approves the scheme and passes the necessary appropriation surveys will be undertaken and construction work commenced.

Already the Governor is having the streets in Tsinanfu widened and macadamized, and a new road is being built round the city. Adjacent old roads are about to be repaired or rebuilt, and where necessary new ones will be constructed.

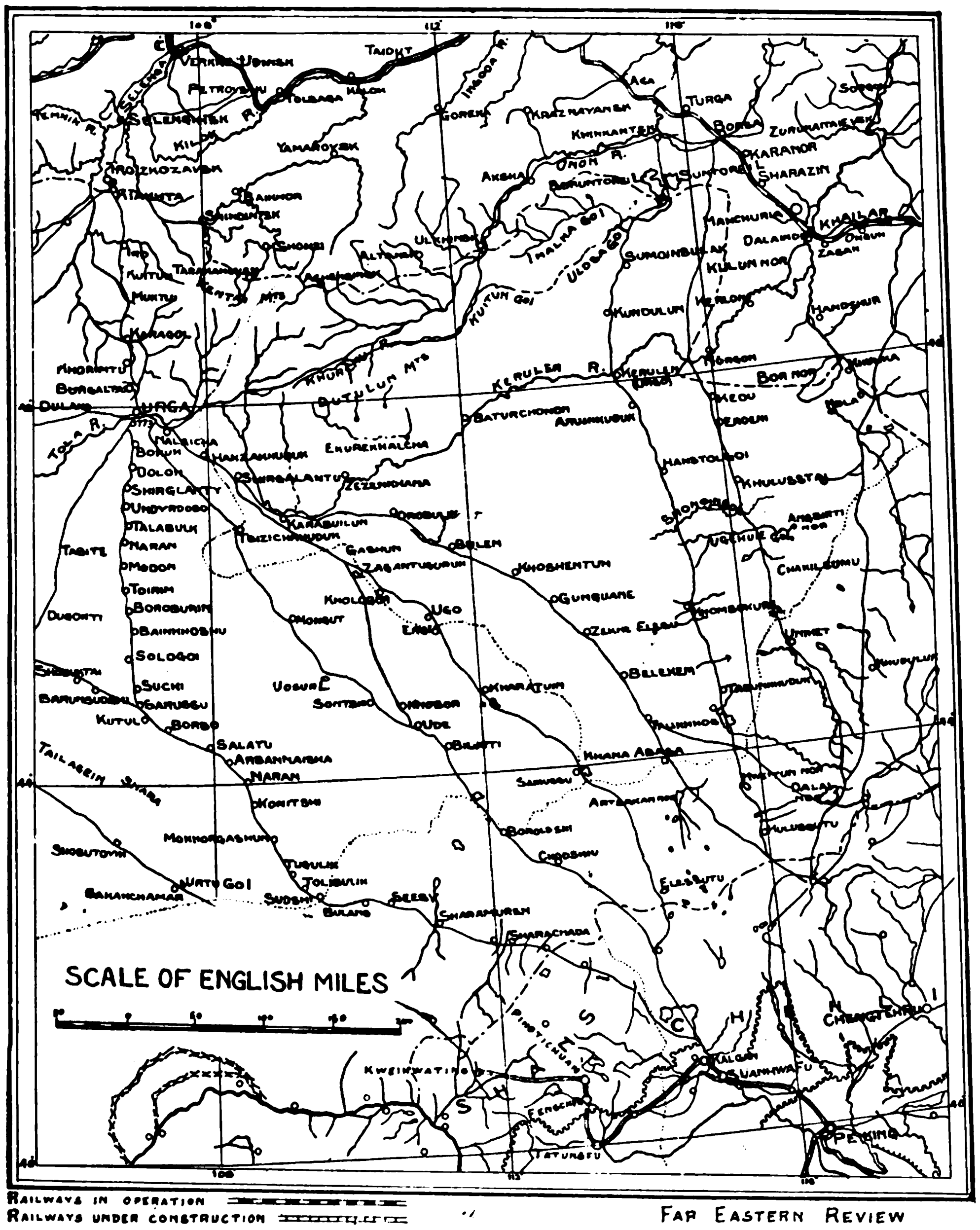
He also intends to have the Yellow River in Shantung attended to and dredged where possible. One of his plans is to have a port developed at Lukow, on the Yellow River, near the great steel bridge which carries the railway from Tsinanfu to Tientsin and Peking. At this spot—which is connected by a spur to the main railroad—a large junk traffic is already handled. The scheme is to deepen the river and establish the necessary improvements to make it a center for small steamboat traffic. The Yellow River is a big problem, as is also the improvement of the Siaochingho, but Governor Chu is confident that the wherewithal can be found to undertake the work that is necessary. The Siaochingho will have attention before the Yellow River, and work upon it will, he hopes, be started simultaneously with the building of a co-ordinated system of motor highways.

[See under "Engineering, Financial, Industrial and Commercial News" for references to other motor road schemes in China.]

Mr. Wang Ching-hui, who is one of the early revolutionists, and is famous first, for attempting to assassinate the old Prince Regent, second for having survivied the horrors of Manchu imprisonment, and third for resisting all offers of office under the Republic, is busy lecturing his countrymen in South China on the necessity and importance of industrial development. He claims that industrial development will solve the pressing political and economic situation. He advocates that foreign assistance be secured in the shape of machinery and productive commodities rather than in loans. The latter are mostly squandered, he says, while machinery can be used for the profitable development of private and public enterprises.

Peking-Urga Railway Project Revived

ACCORDING to statements made in a responsible quarter in Peking the Government has determined upon an extension of the Peking-Suiyuan Railway from its present terminus at Fengchen to Urga, the capital of Mongolia. Surveys are to be begun in the spring and a Presidential Mandate is expected shortly appointing General Tinge Shih-yuan Director of the Peking - Suiyuan-Urga Railway. General Tinge is at present director of the Peking-Suiyuan line, a description of which appeared in the FAR EASTERN REVIEW, November, 1919.



MAP OF SECTION OF MONGOLIA SHOWING POSITIONS OF PEKING AND URGA.

On this map is shown the existing railway between Peking and Fengchen. At present construction work is under way as far as Pingtichuan. If an extension is made to Urga the line will take off either at Pingtichuan or from some point between there and Kweihwating (also spelt Kueihuacheng). A line to connect Peking and Chengtehfu, commonly known as Jehol, and which is shown on the map, is also being talked of in official circles at Peking. The Japanese already hold the right to build a line from Chengtehfu northwards to Taonan.

Now that the autonomy of Mongolia has been cancelled and that territory once more comes under the direct jurisdiction of Peking it is only natural that consideration should be given to the building of a railway in order effectively to control it. During the past year serious efforts have been made to establish closer relations with Urga by the utilization of motor cars. Many cars were used during the year, but owing to defective organization, reckless driving by unskilled Chinese, and the absence of proper repair shops the service was found to be anything but profitable. So far as the Government officials are concerned they decided to discontinue the service with the arrival of the cold weather, when motor transport over the plateau automatically ceased. The experiment taught them that only with good roads, good mechanics and drivers, regular stations at intervals across the Gobi, and elaborate organization, could a motor service succeed, and this would cost so much that they turned their attention once again to railway connection.

The return of Mongolia to the national fold has undoubtedly revived the desire for a railway for military purposes if not for commerce and colonization, and it will not be surprising if a start is made with a survey early next year though money is tight. There are observers of developments in this territory who aver that Japan will be only too ready to supply the necessary capital, it being believed that Japan is particularly interested in the movement which has culminated in the cancellation of Mongolian autonomy.

A railway will be a distinct advantage inasmuch as it will open a large tract of splendid grazing land, as well as afford a shorter route to Europe if it is continued from Urga to Kiachta and on to the Siberian railway at Verkne-Udinsk. It has been estimated that such a line will reduce the distance by rail to Europe by some 600 miles, while the time for the journey from Peking to London would be cut down to nine and a half days. The project is not a new one. In the past Russia made several attempts to have this line built with her own Imperial desires in view, but China would not become a consenting party. However, Mr. Alfred Sze, present Chinese Minister in London, when Minister of Communications in 1912 recommended the building of the line with Chinese capital as far as Urga, naming Tls. 100,000,000 as the probable cost. His idea was to have the line built as a private one by private Chinese investors, but the proposal did not mature owing probably to the disturbed state of the country following the overthrow of the Manchu Dynasty, and the subsequent internal turmoil due to the differences between the politicians and militarists of the North and South. General Hsu Shu-cheng is now said to be arranging for a domestic loan to carry on the work.

Railway System with Shanghai as Terminal

Noted Engineer Urges Definite Policy in China's National Transportation System—Railways, Roads, Waterways and Ports

AT a meeting of the Engineering Society of China Mr. H von Heidenstam, Engineer-in-chief of the Whangpoo Conservancy Board, read a brief paper as an introduction to a discussion on Shanghai as an industrial and commercial metropolis.

Following an explanation showing how the question had arisen in connection with the investigation of the problem of improving the Shanghai Harbor, and mentioning that while the Whangpoo Conservancy might be expected to solve the technical features of the harbor question there were many other questions on which Shanghai's future depends, he said :

" The average Shanghailander, whether Chinese or foreign, has had no particular inducement or encouragement to think of Shanghai as a whole or of its future, and his motto is as often as not *apres nous le deluge*. He thinks of, or at least acts only for, his own particular business, and if confronted with larger issues, has that very natural inclination to shrink from them. The foreign trader considers himself generally, and with perfect right, as a passing guest. The Chinese resident in the foreign settlements lives as a guest in his own country because it suits his particular purposes, while the Chinese in the city and suburban areas profit by the proximity of the settlements and add to its importance but have not worked, so far, for the development of the whole on sound lines.

" Shanghai now begins to compare with the big centres of Europe or America with their complicated and highly organized forms of life and administration.

" The difficulty is that Shanghai as a whole is not organized for tackling any big problem. On the contrary, there are two foreign settlements, of which one is international, and at least two Chinese administrative areas. This has, of necessity, produced a multiplication of all public services and administrations, which complicates all issues and renders the final ideal of a large unified Shanghai, with an equally good government as the Settlements now have, very difficult of attainment.

Shanghai, a Model City for Chinese

" Is a greater Shanghai in every sense of the word possible? That is the question before us.

" Shanghai can, however, become really great only by being not only two model foreign settlements, but also a model Chinese city for Chinese, which at the same time is a suitable place for foreigners.

" If the foreigners want to work on sound lines, it is necessary for them gradually to enlist and awaken Chinese sympathy and support for the future of Shanghai. This should not prove so difficult if a wise policy is adopted. As long as the ' settlemental ' development is so conducted that it will provide model administration, protection, trade-profit and western 'wisdom' for the Chinese, they will flock to Shanghai. To assure, however, active Chinese support and co-operation, if it is at all possible, it is necessary to devise some line of development, providing for such co-operation, with the aim of finally merging all of Shanghai into one unified community at least in certain respects.

" What is done to benefit Shanghai as a great future centre will also ultimately benefit China, and the Chinese, and if the Chinese do not look upon it in that light, they should be educated to do so.

" As a small step in the right direction the writer would propose that in all public schools in Shanghai, courses in ' municipal government ' should be given.

" Improved labor conditions may prove necessary if the supply of labor and its quality should be kept up to the high figures required for an industrial metropolis. The social and economical revolution, in the throes of which the world is now suffering, will have its aftermath also here—and it is as well to realize it in time.

Transportation Policy Wanted

" China needs a definite policy in the national transportation system, roads, railways, waterways and ports, avoiding unnecessary competing lines and ports and development on rational not on political lines.

" In this connection, in the unification schemes which figure in both the Government programs and the Consortium schemes, the scrapping of some of the projected lines, which are in unnecessary competition with others and with existing good water routes, or are directed towards unsuitable ports, should only be for the general good. There would be no selfishness on the part of Shanghai in suggesting that the whole railway net of Central and North China be so modified that the traffic will converge to and diverge from the principal port. It is up to the interests of Shanghai who desire its future development, to further and influence a national railway policy with the chief ocean terminal of the country at Shanghai."

As to industrial development, Shanghai is already *a fait accompli*, but can it develop and maintain its lead? It is on these subjects the speaker especially suggested that the various experts, who are members of the Society, should come forward each in their own line and cast the horoscope.

Industrial and Construction Questions

What about the supply of fuel for power supply, heating and ships (coal and oil)? How is Shanghai to get cheapest supplies and to make itself independent of other countries? How much coal and oil will be needed? How are the general conditions for industries in Shanghai as compared with other centres?

What about food supply? How is the situation as to building materials, cement, stone, glass, etc., etc.? Can cement be locally made? Can one build a real sky-scraper on the bund?

From where will the iron and metals be derived? Can structural steel be made in Shanghai?

What are the chances of supply of timber from Japanese, Chinese, American and Russian sources? What can North China supply?

What about the general financial and economical institutions and measures required to lead and support the industries?

The speaker urged the various local experts to indicate the possibilities of development and remarked that their efforts could be greatly increased by a general agreement. He concluded by noticing the special demand for education and research in Shanghai. A schedule of the suggested technical questions in relation to Shanghai development was circulated as an appendix to the paper.

An interesting discussion followed the reading of the paper which was closely followed by a large meeting. The proceedings closed with a hearty vote of thanks to the author.

Independent American Loan to China

The Pacific Development Corporation and Hayden, Stone & Co. Ready to Lend up to $30,000,000

THE history of the new loan of $5,500,000 to China by the Pacific Development Company secured on the revenues of the Wine and Tobacco Public Sales Tax is one of the most interesting stories in connection with finance in China of the year or indeed of some years past. The contract was signed on December 10 by Mr. E. B. Bruce, of the Pacific Development Company, who arrived from America but a week or two previously, in company with Mr. Galen F. Stone, of Messrs. Hayden, Stone and Company, of Boston, and others, in connection with the formation of the Sino-American Bank, referred to elsewhere in this issue. When they set out from America they did not do so with the object of entering the loan field. The situation was such when they got here that they were made an offer which they deemed it business on their part to take up. As Americans they were interested in preserving the prestige of their country, and as business men they were in the position personally to deal with whatever was placed before them without having to undergo the strain and delay of referring all points of negotiation to principals in New York, as is the usual case. Within a few days they had considered everything and the agreement was signed, a feat of speed in loan negotiation that astonished the Chinese officials and one which marks an epoch in foreign financial relations with this country, for the reason that it is the first time on record that two principals have come to China and conducted business themselves. This signifies two things. One that there is increasing interest in America in affairs in this part of the world, and a readiness to enter the financial field, and another that business can be done speedily when responsible men are able to come and do it.

The loan made by the Pacific Development Company sprang from the negotiations recently carried on in New York between Mr. John J. Abbott, of the Continental and Commercial Trust and Savings Bank of Chicago, and Mr. Hsu Unyuan, representing the Chinese Government.

On October 10 an agreement was signed in New York by the representative of the Chinese Government with the Continental and Commercial Bank for a short term loan of $5,500,000 to take up the three-year Gold Treasury Notes issued in connection with a loan for $5,000,000 floated in November, 1916, by the same bank, and which matured on November 1, 1919. Interest to be 6 per cent. per annum and the discount to the bankers 91. On October 30 the bank put on the market "$5,500,000 Republic of China six per cent. two-year Gold Loan Treasury Notes of 1919," dated November 1, 1919, and due on November 1, 1921, with interest payable on May 1 and November 1 of each year till maturity. The price was "98⅜ and interest to yield over 7 per cent." as the prospectus put it.

A Second Loan Agreement

The agreement for this loan of $5,500,000 carried with it an option to raise an additional $25,000,000, * which the Chinese Government's representative asked the Continental and Commercial Bank to take up immediately after the signature of the agreement. Negotiations were entered into, and on October 21 a second agreement was signed by Mr. Abbott in New York for the Continental and Commercial Bank for a loan of a minimum of $10,000,000 and a maximum of $25,000,000 gold, on the basis of the Bank making a public offer to sell as much as it could. For this loan the security offered included the surplus revenue of the Salt Administration, as well as the revenues of the Wine and Tobacco Public Sales Tax.

The Banks connected with the projected new Consortium protested against the loan on the ground that it was premature in view of the pending formation of the Consortium, and as soon as it was known to the bankers of the old Consortium which made the Reorganization loan of $25,000,000 to Yuan Shih-kai in 1913—secured on the salt revenues—there were more protests on the ground that the new agreement violated, as to security, Article 17 of the Reorganization Loan Agreement. French interests also protested on the ground that they likewise were interested in the security and specially in the reorganization of the Wine and Tobacco Tax Administration, and claimed a share in that work. The combined assaults rather nonplussed the Chinese Government who deemed it expedient to suggest to the Continental and Commercial Bank that the Goods Taxes be substituted for the salt surplus as collateral security. The Bank was naturally disturbed by this important change, as well as by the protests, and, as the old group of bankers about the same time signified a willingness to make a loan to China of some £5,000,000 on certain conditions, and the New York market was at the same time being besieged by Allied countries for loans, the Bank considered it advisable to forego the option and let the larger loan go.

Those working on the formation of the new consortium, which has been held up by the demands of Japan that Manchuria and Mongolia be exempted from the operation of the policy of the consortium, endeavored at this period to bring greater pressure on Japan to persuade her to forego her claims, and to join in making an advance of money to China to tide her over her immediate difficulties. The endeavors came to nothing, however, and while China had managed to cover the redemption of the three-year bonds maturing on November 1, 1919, she was still without the finances she so keenly desired, the loan for $5,500,000 being merely a paper transaction.

It was at this juncture, when the coast was clear for an independent American loan, that Mr. E. B. Bruce, of the Pacific Development Company, and Mr. Galen F. Stone, of Messrs. Hayden, Stone and Company, and others arrived in China and were acquainted with conditions. Without any hesitation they decided to take up the agreement abandoned by the Continental and Commercial Bank. The negotiations were brief, because the negotiators were able to decide the various points that arose personally and promptly, and on December 10 they had agreed to loan $5,500,000 and take an option for the issue of $25,000,000 more. The security for this loan is similar to that for the Chicago loan, with the right to undertake the reorganization, with the Chinese, of the Wine and Tobacco Tax Administration. Such reorganization, if it is undertaken, will be on the lines of the reorganized Salt Ad-

* The agreement provided, if the total loan of $30,000,000 were made, that $5,000,000 should be set aside for the retirement of the old bonds, and $1,000,000 should be used for the reorganization of the Wine and Tobacco Tax Administration, an American satisfactory to the bankers to be appointed by the Chinese Government as Associate Inspector-General of the Administration. Beginning from November 1, the bankers were to have paid to the Chinese Government $1,000,000 per week until the exhaustion of the balance of the $24,000,000 due to the Government.

ministration. There will be an American Co-Director, and in this connection Mr. C. L. L. Williams, son of Mr. E. T. Williams, former First Secretary of the American Legation, Peking, and later head of the Far Eastern Division at the State Department—has been selected by the Chinese.

Naturally opposition to the loan arose in quarters immediately the news became public. First, because it struck for independence of financial activities, which, of course, is counter to the policy of those wishing to inaugurate a new consortium; second, because it gave independent American interests a decided foothold in the financial arena; third, because it did not suit the book of certain Chinese who are playing politics, and fourth, because the loan is a gold one made when the rates of exchange are very much against the country. Certain foreign interests and the Anfu Club—a militaristic political party—appeared to be working an opposition movement in cooperation—working for the same end but inspired by different motives.

The reactionary element of the Anfu Club were, in particular, most active, for in addition to the fact that the American loan means no money coming into their own pockets, it actually carries with it a loss to Anfu officials in the Wine and Tobacco Administration, for the reorganization of the whole system will naturally do away with the opportunities for "squeeze" which are alleged to exist. Another reason for the Anfu Club's objection to the loan may be found in the fact that it threatens to undermine the power which it has wielded for its own ends for some years past.

The Government is in sad need of money for purposes of administration, to carry out its plans for the demobilization of superfluous troops throughout the country, and to carry out its numerous constructive plans pending and after the conclusion of peace with the South. The loan was, therefore, calculated to strengthen the hands of the progressive section of the Government against the Anfu Club, and permit the former to carry out its policies with a greater degree of independence than it has hitherto enjoyed.

Judged from a Chinese national point of view, there are two advantages attached to the loan. One that it demonstrates the willingness of responsible American capitalists to operate independently in China, if they can, and that the terms upon which it is made involve the reorganization and consequent increase in the efficiency of the Wine and Tobacco Tax Administration. Indeed this will be all the more apparent when it is remembered that the terms of the loan provide for the lending of further sums beyond the $5,500,000 and up to a total of $30,000,000 conditional upon the value of the security as ascertained after investigation. There is, therefore, a direct incentive for effort on the part of the Chinese Government towards assisting in the remodelling of the monopoly, an incentive which carries with it the further and even greater benefit that when the loan is repaid by China she will receive back the security she pledged in much better condition than when it was originally pledged. The rejuvenated Administration, managed by Chinese and American directors, with American district inspectors in the provinces—the system resembling that prevailing in the Salt Gabelle—will, it is estimated, be able to do more than double its existing income.

Under the arrangements as at present worked out the Wine and Tobacco Tax Administration will eventually have a director, a vice-director, two councillors, four secretaries, two chiefs of departments, eight senior clerks, and sixteen junior clerks. The director is to be Chinese, the vice—or associate—director will be American, while the rest of the Bureau staff will be Chinese. This, of course, only refers to Peking, the head offices of the service. The reorganization of the branch offices and collecting stations will come up later for consideration as will also the entire system for collecting the revenue from the wine and tobacco taxes. This is all the more necessary as it has been plain in the past that much wine and tobacco have reached the consumer untaxed, while "squeeze" during the collection of the revenue has been difficult to detect—probably due as much to the difficulty of administering the tax and the

(Continued on page 46)

Modern Telephone and Electrical Factory in China

Some indication of the development of the electrical industry in China may be secured from the picture which we reproduce here, showing the modern factory which has been completed by the China Electric Company in Chapei District, Shanghai. This Company was organized in July, 1918, as a result of a contract between the Western Electric interests and the Ministry of Communications at Peking. The main buildings contain over thirty thousand square feet of floor space. They are located very close to Soochow Creek, which affords most convenient means of transportation.

A large part of the machinery has already been installed and already over 150 Chinese mechanics are being instructed in the manufacture of telephone and telegraph equipment. The Company is to have its own power plant, and the machine equipment will enable them to manufacture in China all of the apparatus and supplies entering into the construction of modern telephone and telegraph systems.

The China Electric Company is half-owned by the Ministry of Communications and half by the Western Electric interests. They have the exclusive right in the Republic of China to all the patents of the Western Electric Company, which include Common Battery, Automatic and Wireless Telephone Communication, as well as telegraph apparatus and Printer equipment. Native materials will be used as far as possible.

A special feature of the organization is the educational work that is being done to train Chinese experts. Chinese graduates of American Universities are given three-year courses in the mammoth factory at Hawthorne, before returning to take up work in China. Already several of these men have arrived. In addition, the Company has a regular schedule for Chinese students whom they are sending to America for training. In this manner they are assured of a Chinese staff capable of handling the work that is before them.

The New Factory of the China Electric Company, Shanghai

The demand for extension of all means of communication is very great, and this Chinese Company already has on hand a large volume of orders.

Independent American Loan to China—*contd. from page 45.*

number of small stations required for collecting it. A simplified system of collection is now stated to be under consideration, commencing with the larger centres and gradually spreading until the entire country is covered efficiently.

In the reorganized Bureau Chang Shou-ling, former Vice-Minister of Finance, and an official of long and good standing under both the Imperial and Republican régimes, will continue in charge as director. He has had considerable experience in his present office and is highly regarded as an upright and competent man. This $30,000,000 loan on the security of the Wine and Tobacco revenue, of which $5,500,000 has already been paid up to write off the old loan, makes the American interest in the Wine and Tobacco Tax greater than that of any other foreign country, and, consequently, the appointment of an American vice—or associate—director to assist in the reorganization of the monopoly would follow precedents already created and would not, therefore, be regarded as inappropriate, though the French Government takes a different view and has lodged a strong protest against the loan.

The "Asiatic News Agency" understands that under inspiration, certain members of the House of Representatives at Peking are interpellating the government with reference to the employment of an American citizen as associate-inspector-general of the proposed Wine and Tobacco Bureau. The interpellants demand that nothing should be definitely decided by the government without the previous approval of the Parliament because it concerns the finance and diplomacy of China. The "News Agency" also says it is reliably informed that a certain Legation has already informally approached the Chinese Government protesting against the employment of an American to the post of associate-inspector-general of the future Wine and Tobacco Administration and that if the proposal must be realized between China and America, then a financial expert of this country must be employed as *adviser* to the Ministry of Finance. From every point of view, this important matter cannot be settled at present because various interests are involved in it. "Previous to his departure, Mr. Stone and Mr. Bruce informed the Government that America has no selfish motives and that this loan will be pooled with the New Consortium."

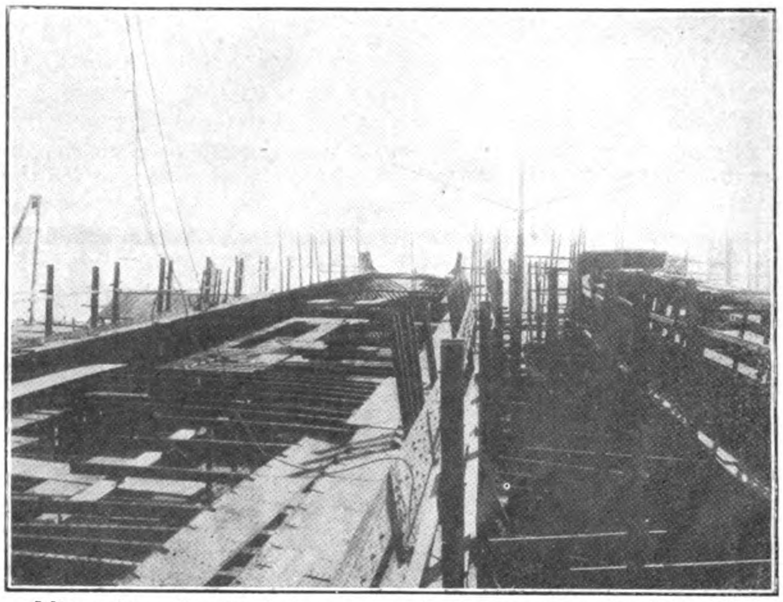
As we go to press we understand that the U.S. State Department has informed the bankers concerned that they do not approve the loan, so the end is not yet.

American Standard Ships Building in Shanghai

A high compliment was recently paid to the Kiangnan Dock and Engineering Works by Mr. J. L. Luckenback, vice-president of the Luckenback Steamship Company of New York, and at present doing patriotic duty as technical expert for the United States Shipping Board, for whom the Kiangnan Dock Company is building four 10,000-ton standard ships. The photographs published herewith show two of the vessels in course of construction, and with the work done on these and the others Mr. Luckenback expressed the highest satisfaction, declaring that they will compare with any built anywhere else both in regard to design and workmanship. The first of these vessels, the *Celestial*, will probably be launched in March, and is expected to be in commission within a month of her launching.

In addition to the four steamers for the American Government the Company is building a number of other vessels, one being for the navigation of the Upper Yangtze River.

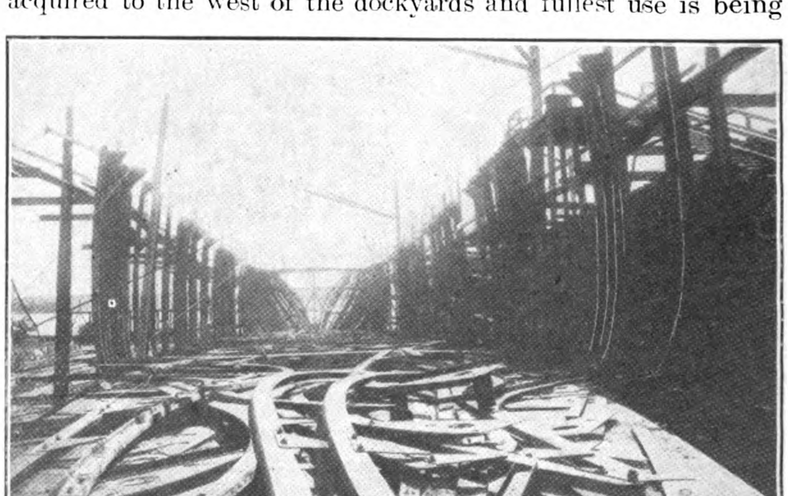
To cope with the American and other orders the equipment of the dockyards was radically improved and brought up to modern requirements. American tools and American machinery dominate, though a number of machines were built at the yards during the stress of war, when it was impossible to import plant in any quantity from foreign countries. Important changes were made in machine shops and a new one was built embracing the latest American practice both in regard to lay out, lighting and machinery. In this shop are being built the engines destined to drive the standard ships now being constructed. In the manufacture of the American Gorham engines and motors, the patent rights for which were purchased by the Kiangnan Company, the highest skill and efficiency are being shown, and the numerous ships are being built and machinery being manufactured by Chinese workmen, numbering some 3,000—under Mr. R. B. Maucham, the Superintendent, and fourteen foreign and nine Chinese engineers.



View of two Standard Steamers under Construction—looking Aft.

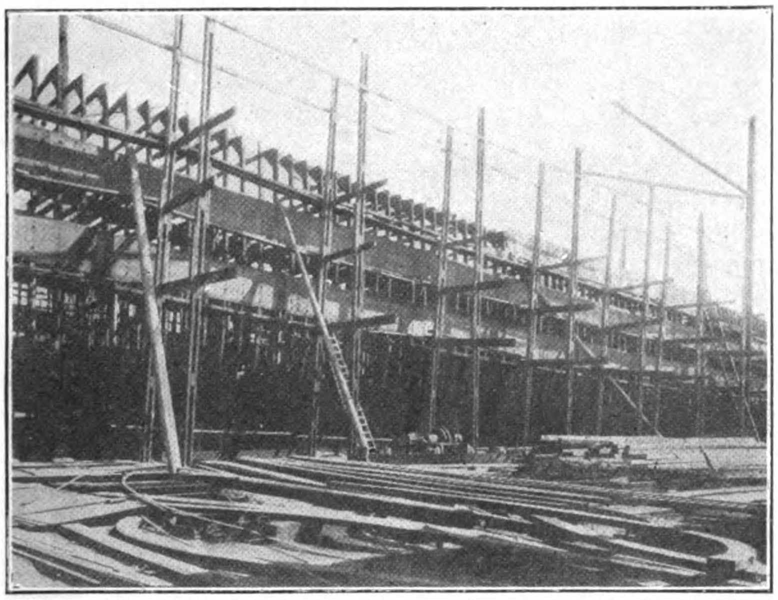
In order to handle large craft such as those now being built the Company is widening its dock from 52 to 61-ft., and when the alterations are completed it is expected that any steamer large enough to reach Shanghai will be able to be docked.

New ways were erected on a large piece of land newly acquired to the west of the dockyards and fullest use is being



View of Standard Steamer under Construction—looking Aft.

made of the area. In the foundry, pattern and carpenter shops, boiler works, and moulding department too, extensions have been made, while new machinery for drilling, punching, searing, flanging and rolling plates has been installed.



View of Port Side of Standard Steamer showing two Strakes in Place

The Directors are Admiral K. N. Lew and Captain K. W. Kwong, while the Secretary is Mr. H. K. Kwong. The construction is all under the direction of Mr. R. B. Mauchan. Directors and staff are to be congratulated upon the impression their work has made upon the representative of the American Shipping Board.

Mr. Luckenbach, speaking generally, paid a high tribute to other dockyards and shipbuilding works in Shanghai, being greatly impressed by their enterprise in installing modern and up-to-date equipment and by the fact that they have, in his opinion, the largest shipbuilding works on the China mainland.

Big Central Station for Peking

The project to construct a great central station at Peking to serve the Peking-Mukden, the Peking-Suiyuan, the Peking-Hankow and the Pukow-Tientsin-Peking lines is again being discussed. The Ministry of Communications had the matter under discussion when the great war put a stop to all large enterprises, and it was then decided to purchase a large tract of land to the immediate north of the Temple of Heaven and join the tracks of the various lines mentioned. At present the Peking-Hankow and the Peking-Mukden railways terminate at separate stations a few hundred yards from each other. With a central station for the accommodation of both there would be a through line from Hankow to Mukden, and if the Yangtze River is ever bridged or served with a train ferry, passengers boarding a train at Hongkong or Canton will be able to go the length of China without changing trains, and they will be able to proceed to Europe with no further transfers than was the case with the pre-war Siberian service. A similar through service will exist from Shanghai to Peking and either to Hankow or to Suiyuan, for as soon as rolling stock sufficient to enable a proper schedule of trains being maintained is secured the Pukow service will start from Peking instead of from Tientsin as at present.

The central station idea takes shape at this time on account of the desire that exists for the junction of the Peking-Hankow and Peking-Suiyuan lines under one managing director. Up till very recently there were two, but when Dr. C. C. Wang, Managing Director of the Peking-Hankow line, was despatched to Europe General Tinge Shih-yuan, the Managing Director of the Peking-Suiyuan line, was put in charge and he feels now that the work connected with the two lines can be carried out by one Manager, more particularly if the two services are linked up into one trunk line.

The sketch plans of the big station were, we understand, prepared before the war, and preparations were made to purchase the land, or rather to settle terms for resumption whenever the Government decided to act, in order to prevent a speculative rise in values.

When the Chinese houses now occupying the site are demolished an area large enough to care for all the lines terminating at present at Peking will be available, and ample yard and siding room will be left after the erection of a spacious station and offices, etc., for future expansion.

According to later Chinese reports, the Ministry of Communications has sanctioned the suggestions of Major-General Ting for the erection of a central station and work will be commenced early next spring. Further, the scheme for the amalgamation of the Peking-Hankow and the Peking-Suiyuan Railways as suggested by General Ting will also be put into effect and after the amalgamation, General Ting will become the director-general of this trunk line with two assistant directors.

Industry at High Pressure in Shanghai

In an article published in the "Shanghai Times" Christmas Number on "Electricity as a Factor in the Prosperity of Shanghai," the following remarks occur :

The cotton industry is in a state of frenzied activity both so far as the forcing of production of yarn and cloth from existing mills is concerned and also the erection of new mills and the extension of old. At the time of writing this article, 16 mills aggregating 563,000 spindles are either in course of erection or are about to commence building operations. When it is recalled that the total number of spindles installed in Shanghai a year ago was approximately 800,000 and that the prospective near future total is 1,400,000 spindles, one may perhaps be permitted to hope that the present relative positions of demand and supply may not become reversed! It is characteristic of the "war created" tendency towards conservation of energy that all these new mills will be operated by electricity derived from the Shanghai Municipal supply mains.

Flour milling is also extremely active and no less than 4 new mills having a total daily output of 26,000 bags of flour are in course of erection, apart from the fact that the older mills, almost without exception, have extended their original plants.

Electric power is also supplied by the Municipal power plant to oil mills, rice hulling plants, tea polishing machinery, and for the manufacture of needles, scent, soap, candles, camphor, chemicals, gunny cloth, mineral waters, socks, sausages, ice, pills, tooth brushes, ink, casks, paper, manure, lace, drugs, buttons and optical lenses also for the operation of plating plants, air compressors, dyeing plants, iron foundries, tanneries, feather cleaning plants, silk winding, wood working, carpet cleaning, air humidifying, timber seasoning, shipbuilding and elevators of all descriptions.

In order to carry into effect the plans to disband useless Chinese soldiery a Disbandment Commission will be appointed early in January under the chairmanship of General Chin Yun-peng the Premier. It is expected that the Commission will complete most of its preliminary work before February.

The Inwardness of the New Consortium

By George Bronson Rea

IN August of last year, the State Department reversed the policy of President Wilson towards American participation in loans to China and officially invited the Governments of Great Britain, France and Japan to join in the organization of a new consortium for the future financing of China. Special inducements were held out to Great Britain and France by offering to carry their share of the loans until such time as they could take them over. The principles so widely advertised in 1913 to justify the President's withdrawal of official support to the old American Group were discarded. What was deemed inimical to China's interest and subversive of American institutions in 1913 became legitimate and praiseworthy in 1918 and without any attempt to justify the change in policy. In advocating the creation of a new grouping of international finance, the President will place China in financial vassalage for the next twenty years. For the new consortium is not only to furnish the loans required for administrative and reconstruction purposes, but every holder of a railway or industrial concession in the four countries is asked and expected to surrender them to the consortium for financing. The plan was so far-reaching, idealistic, and impractical, that no attention was paid to the official invitation in Paris or London until long after the peace negotiations were under way, and it was not until May that the representatives of the Groups met in Paris to perfect their organization and carry out the commands of the State Department.

The far-reaching effects of the proposed consortium may be sensed from the fact that China will require at least $200,000,000 for the purpose of disbanding its army of over 1,200,000 who have been busily engaged in fighting each other and laying waste their own country for the past four years. Then there will be a currency reform loan of $50,000,000, to place the coinage on some stable basis, followed by the Hukwang railway loan of about $150,000,000 to complete the obligation of the old Groups. Here we have a total of $400,000,000 in loans, of which, at least, three-fourths must be raised in the United States within the next year or so, and before any other railway or industrial loans can be placed on the market.

China has signed contracts for the financing and construction of approximately 12,000 miles of new railways, the loans for which have yet to be issued. Under present costs of construction they will call for over $80,000 per mile, or a total of $1,000,000,000. In addition, there are various industrial concessions which will call for another possible $500,000,000. The pooling of all these interests will, therefore, necessitate the raising of loans aggregating $2,000,000,000. Obviously, even if Japan carries her full share and Great Britain and France participate in part, these vast sums cannot be raised in the United States on the Chinese Government guarantee during the next ten to fifteen years, if then. So the pooling of these railway and industrial concessions simply means that they will never be financed except under such terms and conditions as may be dictated by the consortium. This places China in a state of financial vassalage from which there is no escape during the life of the consortium. With these unexecuted contracts awaiting to be financed, China will be prohibited from entering into any new obligation for many years to come. The consortium will become a super-government holding the purse strings, and the nation that dominates the consortium will dominate China. The representative of the consortium will become in fact the Shogun, the Dictator, not only of China, but of all individual enterprise calling for a Chinese Government guarantee.

The attempt to pool all the railway and industrial concessions can only result in grave disorders if not further revolution in China, and a boycott against American trade. Through the signing of an American railway concession in 1916, which provided terms far in excess of all other contracts, it will now be compulsory for China to revise all her outstanding railway loan agreements, and admit all nations into participation in the profits of the railways. This will entail an additional charge on the railways during the life of the loans, of hundreds of millions of dollars, and pave the way towards foreign intervention in the control of the lines in the event of trouble. The elimination of foreign control or participation in the profits of their railways became the fixed policy of the Chinese Government. Over $15,000,000 was paid out during the past ten years to repurchase these rights in the old concessions. But in 1916, a grafting official without any regard to the cherished policy of the nation, and without reference to the parliament or the will of the people, revived these benefits in the American contract, solely to obtain the use of the advance money paid over on the loan. Due to China's secret and other agreements, the participation in the profits must now be extended to all others. When it is recalled that foreign interference in their railways was the direct cause which led to the revolution in 1911 which overthrew the Manchu dynasty, it is reasonable to predict further trouble when the people are fully informed as to the far-reaching nature of the American contract terms. Owing to the protests of other Powers whose rights were invaded in specifying the lines to be constructed, the American contractors have no place in China where they can operate. In order to save this contract and correct the errors of diplomacy which made it possible, the idea of the new consortium was conceived by the American Minister. The American contractors cannot proceed without the consent of the other Powers and the other Powers cannot finance their concessions without being conceded the American terms or better. When the Chinese people wake up to what it all means, there will come a revulsion of feeling against Americans, which under skilful propaganda may result in a serious loss of trade, if nothing worse. The consortium may only succeed and benefit China by confining its operations exclusively to administrative loans.

At the first meeting of the official groups held in Paris in May last, a resolution advanced by the French group was passed, that only such banks as were representative of the financial interests of the nations to which they belonged, would be admitted as members of the groups. This was aimed against the inclusion of the independent French Bank Industrielle de Chine, for the reason that one-third of its capital stock was held by Chinese. It was merely a phase of the bitter fight waged for some years in France by the official group against the new intruder into its Chinese preserves, a corollary to the similar opposition on the part of the American and British official groups to the activities of independent bankers in the same field.

In retaliation, the Banque Industrielle de Chine refused to comply with the invitation of the French Government to

pool its concessions, and, as the government dares not place itself on record as opposing the legitimate right of the independent bank to equal opportunity in China, there is no power that can compel it to surrender its valuable contracts to the proposed consortium. The brother of the president of the bank is sub-Minister of Foreign Affairs, and will undoubtedly see to it that the bank is permitted to operate independently. The bank holds a contract with the Chinese Government for the financing and construction of the Yamchow-Yunnan-Chungking railway under a loan agreement for 600,000,000 francs. In addition, it has a concession for the Pukow Harbor Works, the Yangtze River bridge at Hankow and the public utilities for the city of Peking under a loan agreement of 150,000,000 francs, or a total of 750,000,000 francs. With the present costs of labor materials, transportation, etc., these loans will have to be increased at least fifty per cent., or a total of 1,125,000,000 francs, equivalent to $225,000,000 at par.

The Pukow Harbor Works Loan embraces the establishment of industries and the execution of public utilities in the city of Peking calling for the construction of tramways, reorganization and improvement of the electric light system, and waterworks, construction of markets, public buildings, museum, parks, etc., and the repair and improvement of the sewers and roads. The contract, therefore, hands over to the independent French bank practical control over the public utilities of the capital city of China.

The railway contract held by the bank is distinctly part of the old Russo-Franco-Belgian scheme to cut China in half by a north and south strategic railway that would permit Russia on the north to join hands with her French Ally on the south and menace the approaches to India from the northeast through the neutral territory of China. It was the culmination of years of cunning Russian diplomacy working hand in glove through her old Ally and financial agent. It constituted a direct menace to India, the integrity of China and the life of Japan. From the international political standpoint it was one of the most audacious schemes ever carried out, and made possible through the venality of the Chinese interested in the Bank.

When the Banque Industrielle was frozen out of the official French Group in the new consortium, its management, after refusing to pool their concessions, immediately set to work to organize its own party of engineers to proceed to China to conduct the surveys for the railway. They calculated that this would take at least two years, and by that time financial conditions would be so improved as to permit them to proceed to issue the loan in installments and carry out their obligation over a period of ten years. This is a clear cut statement of the exact situation in France. There has been no criticism directed against this independent French move.

Acting upon the advice of the General Staff, the Japanese Government in September (four months after the French refused to pool their concessions), declined to permit their railways and industrial concessions in Inner Mongolia and Manchuria to be included within the scope of the consortium. As a result, a storm of criticism has been raised against Japan in the Chinese and American press, and the State Department has notified Japan that it refuses to recognize its right to exclude her concessions in these territories. Now the railway concessions held by Japan in these territories do not exceed 1,200 miles. The pre-war cost of constructing railways in this comparatively flat country, was estimated at $30,000 per mile, and at the present time, this would be increased fifty per cent. But we may accept that these costs will be doubled. The present value of these concessions, or rather the amount of the loans required for their construction, will then be $72,000,000. With all possible industrial and mining concessions added, the total amounts of loans required for the Japanese concessions in Inner Mongolia and Manchuria should not exceed $100,000,000. The unbuilt lines in Shantung are not included in this, as Japan is willing to place these in an international pool or divide them with the Chinese. They do not exceed 400 miles with a pre-war value of $20,000,000, and a present value of $30,000,000.

The Chinese and their American friends now make the claim that the Japanese concessions in Inner Mongolia and Manchuria are a direct menace to Peking, and the refusal to pool these railways must be accepted as irrefutable evidence of Japan's aggressive designs in this direction. It is only necessary to recall the strategical significance of the French Yamchow-Yunnan-Chungking railway concession, and its relation to the Russian plan to cut China in two from north to south, and the first mortgage that the same combination has on the public utilities of Peking, to offset this accusation against Japan. The distinct pro-Russian flavor of some of the contracts entered into by China would compel Japan to hold tight to her concessions in these districts as her only safeguard against the future come-back of her old enemy.

The Japanese decision to exclude Inner Mongolia and Manchuria from the scope of the consortium was influenced by the highest strategical considerations, in order to protect themselves against Russia, a task that China, in the past, has proven incompetent to undertake herself. From the financial side of the question, if Japan should accept the invitation of the consortium there is no guarantee that her concessions will ever be financed. She will be called upon to subscribe at least $100,000,000 in the consortium loans for reorganization, currency reform and the Hukwang lines, before any attention could be given to her own concessions in the north, and then she would have to take her chance with the many other railway loans that would immediately demand recognition. In other words, Japan will be called upon to raise her share of the consortium loans to the extent, perhaps, of $150,000,000, without any assurance that her own concessions will be financed. She will have contributed more than would be necessary to complete the lines herself. So from the purely selfish viewpoint, Japan's position on the consortium has much to recommend it.

In criticising Japan, it is well to bear in mind that the most important concession ever granted by the Chinese Government is what is known as the Pritchard-Morgan concession held by the Eastern Pioneer Company, Limited, of London. It embraces the mining rights to the entire province of Szechuan, an inland empire containing over 60,000,000 inhabitants. There is no indication that it will be pooled in the consortium, in fact, it is certain that it will not be. If it is, this simply increase the task of the consortium, and means the concession will also be placed in cold storage until such time as the American investing public has undergone several attacks of indigestion from an overdose of Chinese bonds. There is no criticism raised against the exclusion of this concession from the consortium.

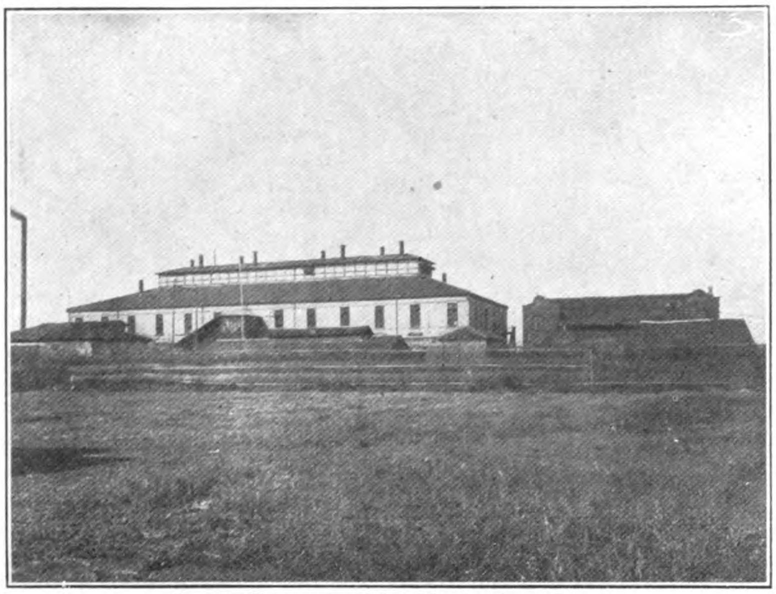
Tibet is closed to railway mining and industrial enterprise, through an agreement between Great Britain and Russia and accepted by China. Russia has prohibited railway construction in Mongolia to prevent the colonization of that vast territory by its rightful owners. Yet with all these facts before us, the American government aided by Chinese press propaganda, is taking a one-sided view of the problem and concentrating its diplomacy towards compelling Japan to surrender her concessions, while not one word of protest or criticism has been directed against the French Bank who created the precedent, or any attention paid to the Szechuan

concession or the position of Tibet and Mongolia. Japan is entitled to a square deal in these matters as well as China. Her concessions were obtained in the identical manner employed by other Powers to compel China to sign the agreements. The present trend of American diplomacy and criticism can only result in widening the breach between the two nations. It is impossible to concentrate on one Power and hold it up to the contempt of the world, when others who have created the precedent are proclaimed innocent and incapable of wrong. The way we are proceeding can only terminate in another failure, to satisfy the one-sided ideas of those who refuse to face the facts of one of the most delicate international problems that the world has to face.

New York, November 15, 1919.

Electric Lamp Making in Shanghai

The manufacture of electric lamps is now to be ranked as one of Shanghai's important industries. The factory set up at 15 Robison Road, Shanghai, by the International General Electric Company, and conducted by the General



Lamp Factory at No. 15 Robison Road

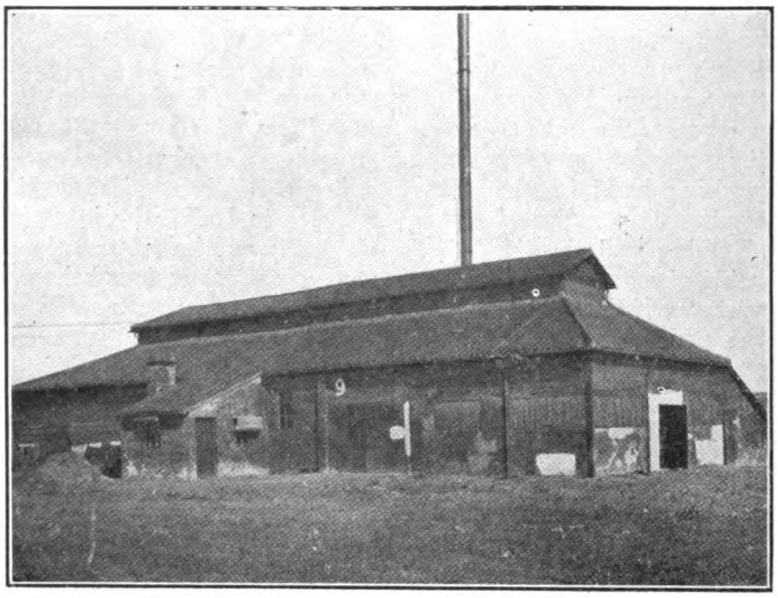
Edison Corporation—a subsidiary company—manufactures from 15,000 to 20,000 lamps per day, and employs a staff of some 400 work people. The factory is constructed on modern lines with particular attention to hygiene. The employees are entirely Chinese supervised by American and American educated Chinese engineers. They are chosen for skill and quick thinking and are paid accordingly, as a result the wages received are higher than is paid for factory work requiring less skill. All employees are required to learn sufficient English to enable them to keep a record of their work.

Stringing the Filaments Prior to Being Placed Inside of Bulbs

Out of the 400 employees but few of them ever saw an electric lamp before entering the factory and that they have developed into clever workers speaks volumes for the management.

The operation of blowing the electric bulb through its various peregrinations to the final test, and the packing of the completed product for shipment is most interesting. The bulk of the work is done by Chinese women, especially the work of placing the delicate metal filaments inside the globes. Each individual lamp represents a highly technical engineering feat. As the product passes from one department to the other, it is constantly under the supervision of specially trained men in order to avoid any lamps which may prove faulty being sent to the shipping department.

An efficient system of checking is used in all the China General Electric Edison Company's factories throughout the world where plants are established and as a result of this careful inspection the public has come to know that an electric bulb stamped with "G. E. Edison" is a guarantee of its quality.



The Glass Factory, where the Bulbs are Blown

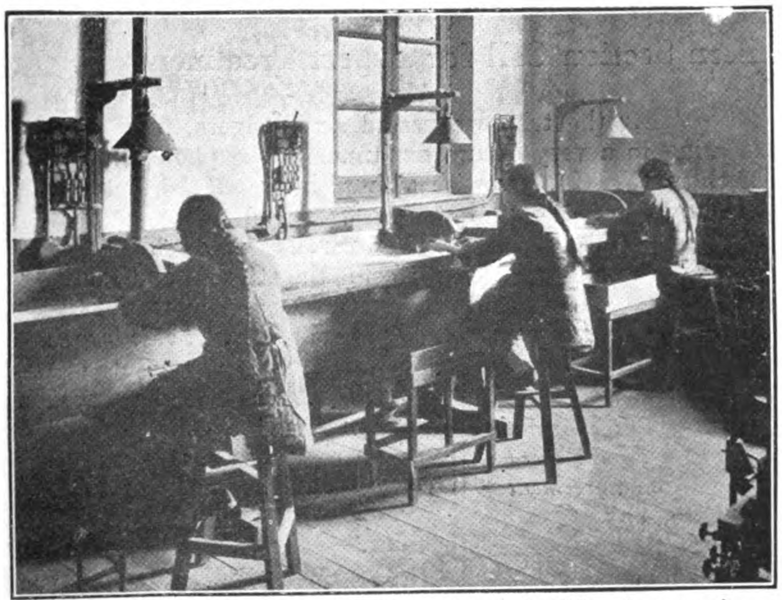
In the making of electric lamps sand plays an important part, the work requiring sand of a particular nature. To obtain this the Company's engineers scoured China, and, being successful, the factory was erected. Another interesting feature of this new industry is that every box of lamps ready for shipment from the factory bears the trade mark "Made in China" and the China General Electric Edison Company claim the distinction of introducing it.

These lamps are sold either through Messrs. Andersen, Meyer & Co., who are the sole distributing agents in Shanghai, or by the International General Electric Company direct to importers in the Philippines, the Dutch East Indies, Siam and the Straits Settlements, which fact alone proves of infinitesimal value in the way of advertising.

Mr. W. M. States is Manager in the Far East, exclusive of Japan, for the International General Electric Company, Mr. H. C. Stone being the Assistant Manager.

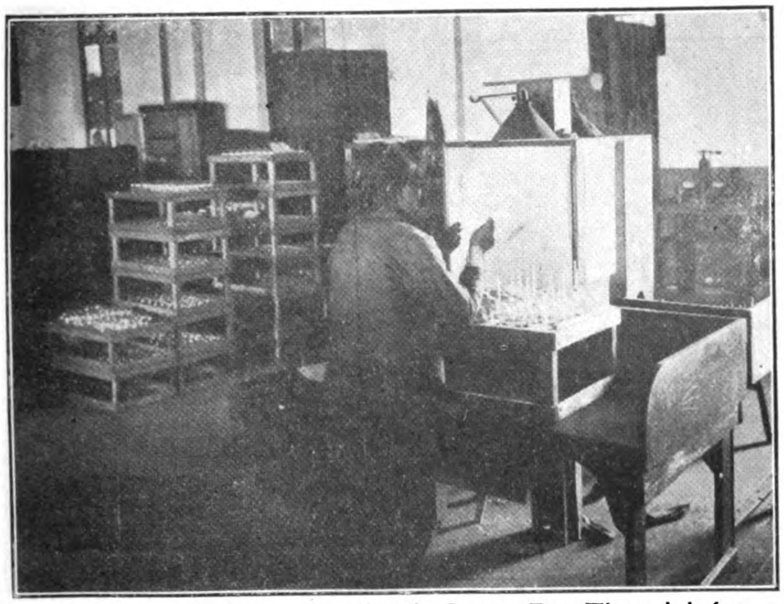
Mr. H. E. Page is the Managing Director of the General Edison Corporation, whose factory is the subject of this notice.

The outlook is extremely good and in the future, as demand calls for it, other devices upon electrically manufactured lines will be entered into.



Cutting Glass Tubing—the first Operation in the Manufacture of an Electric Lamp

A Corner in the Packing Departments. Note the National Trademark—"Made in China"



One of the many Inspections that the Lamps Pass Through before Coming up for Final Inspection

Radical Amendment of British China Co. Law

On January 1, 1920, a British Order in Council comes into force which will seriously affect certain companies established in Shanghai and other parts of China and registered under the Hongkong Companies Ordinances as China Companies. The new Order lays it down that no person other than a British subject resident within the limits of the Order shall act as managing director or in any position similar to that of managing director, or shall otherwise exercise general or substantial control of the business of a China Company. This means that several important and well-established companies will have a great deal of trouble thrust upon them as a new year gift. Unless present managers or managing directors who are not British are changed the company responsible for the neglect will be liable to a fine of $50 for every day during which the default continues, and failure to comply with the provisions of the Order shall be a ground upon which an order for winding up the company may be made by the Court. Another principal point is that the Order applies the Fire and Marine Insurance Companies Ordinance to China companies of local registration. The "North-China Daily News," the leading British paper in Shanghai, says this means that such companies doing fire and marine insurance business will now have to come into line with the purely Hongkong companies, and deposit $100,000 either in cash or approved securities in order to start or continue business. At the same time summary penalties imposed on these companies for offences are increased from £20 to £200. It is well known, the paper adds, that in the past a number of companies having a merely nominal, if indeed any British interest, were registered under the Hongkong Ordinances. From time to time the inconvenience of this was shown by the fact that while the British Court had jurisdiction over the company as such, it had none over its personnel, as in some cases there were no British directors. Subsequently, when local registration of China companies was permitted, it was enacted that the majority of the directors should be British, but this did not meet the case in the least, as it was always possible to put in figureheads as directors, who had actually no control and little real interest. The present legislation makes it certain that in British companies, real British interests and control will predominate.

The American Chambers of Commerce is naturally indignant and is seeking an interpretation from British official sources before making representations to the State Department.

Shanghai Tramways in 1919

The following are the approximate traffic figures of the Shanghai Tramways for 1919 as compared with 1909, the latter the first complete year of the Company's working :—

	1919	1909
Car Miles	4,500,000	1,979,001
Passengers	95,000,000	11,772,715
Gross Receipts	$2,102,600.00	$570,030
Less : Loss by depreciation of subsidiary Coinage ...	521,000.00	116,089
Effective Receipts	$1,581,600.00	$453,941
Miles of Route	17.45	16.28

There are now more than 637 motorcars registered in Peking.

The Grand Canal

Conditions on the Lower Part of the Northern Section Call for Expert Treatment

The accompanying notes on conditions on the lower portion of the northern section of the Grand Canal are of moment in view of the improvement work which is projected under an agreement with the Siems-Carey Railway and Canal Company on the upper section of the canal, and the necessity which exists for thorough-going improvement. The information is furnished us by a gentleman who can unreservedly be described as an expert on the waterways of Central China, having had many years' intimate experience on the Yangtze River, the Grand Canal, and the inland lakes and creeks. The subject deserves the close attention of all authorities interested in commercial development and in the condition of the waterways of Central China—which are the great trade arteries—particularly in view (1) of the agitation which has been going on for some time for systematic efforts or effect improvements, and (2) the attention which was drawn recently to the matter by the British Chamber of Commerce Conference held recently at Shanghai. If the Chinese Government will immediately appoint a Yangtze Conservancy Board, composed, of course, of experts with experience of the waterways, much future trouble and loss will be saved. There is really no excuse for the condition into which the rivers and waterways of China have got, and experts alone can economically restore them to an efficient state.—Editor.

IN contrast with the Southern Section of the Grand Canal—a name which, in the interest of truth, should now be altered; whatever claim it may once have had to the title—the Northern Section, between Kwachow and Tsingkiangpu, has received some attention during the past few years; mainly, I understand, through the intelligence and influence of the late General Hsü Pao-shan, better known as "Tiger" Hsü, who employed the troops under his command in grading and stone-facing the banks from near the Yangtze at Kwachow, to near Yangtze-ch'iao, below Yangchow. The work looked well, when I saw it in July, 1918, but I learned later that the piling was very defective and weak; and there is always a chance of the stonework sliding into the Canal. *Vide* Photograph No. 1.

Near Shapo there is a high, and solid-looking stone bunding, of considerable age, on the east bank; designed to protect the city and district from floods emanating from the lake of that name. There are several sharp bends in the Canal near Shaopo.

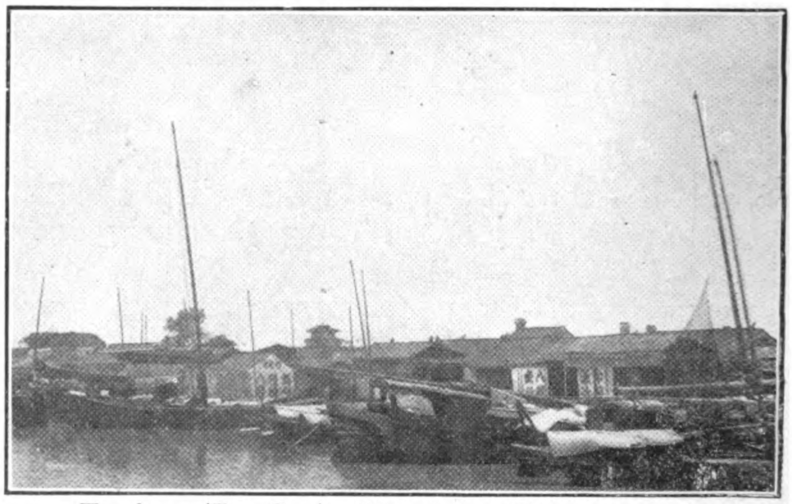
It was very noticeable that east of the Canal, the country, *which is below the summer level of the Canal*, is very fertile. Numerous hamlets are visible from the embankments; the country is liberally dotted with clumps of trees; and the crops looked excellent; and I believe proved to be so at harvest time. To the west of the Canal, however, practically no cultivation was observable; nothing but a chain of lakes—or, more properly, shallow lagoons.

During the trip, we passed six dredgers, four of them working in a very leisurely manner. The photograph of one of them (No. 2), herewith shown, indicates the fact that the machines of very low power; and the amount of mud dredged in a day's work is very little. Grab-dredgers can do little good to the Canal and surrounding country; but powerful suction-dredgers might provide large areas of land, especially to the westward, which could be placed under cultivation. It appeared to the writer also that a careful survey should be made of the chain of lakes (lagoons) west of the Canal, which in their present condition are of little use to anybody.

By deep-dredging portions of these lagoons, and depositing the mud to a height above any calculable flood level, lakes of a fair size and depth could be created for the breeding of fish; while the reclaimed land should produce abundant crops. The drainage towards the Yangtze would require the consideration of experts.

One of the contributory causes of the present unsatisfactory condition of the Canal in this region is the manner in which—formerly, if not still—the dykes have been handled. Instead of dredging the bed of the Canal, and employing the mud for some useful purpose, the practice has been to raise the dykes with mud—not from the Canal bed—but dug out of the country at the inland foot of the dykes, to the east and west; with the result that, in places, the bed of the Canal is actually above the level of the surrounding country.

The Custom station near Hwaianfu. This used to be considered the worst "squeeze" station in China. One of the old Imperial Customs Stations

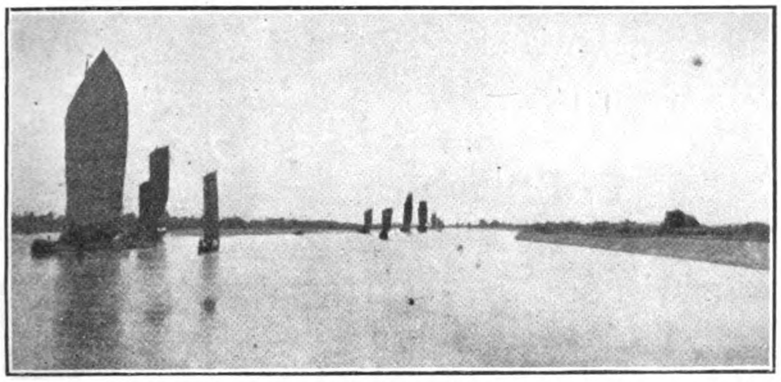


Tungkwan (East Gate) at Yangchow. City gate tower in background

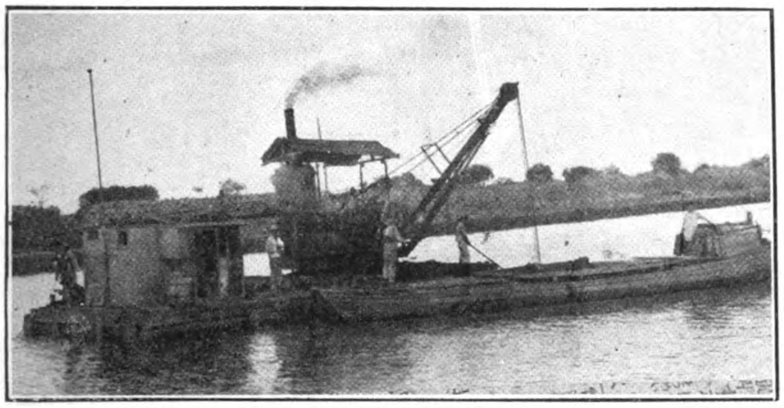
The result of any breach that may occur at such points can be easily imagined.

Another matter which is liable to cause trouble is the apparent lack of any combined action on carefully considered lines. There is nobody responsible for any definite scheme of Canal Improvement, and the inhabitants of one district are at liberty to carry out any works they please, without the slightest regard for possible consequences in other districts.

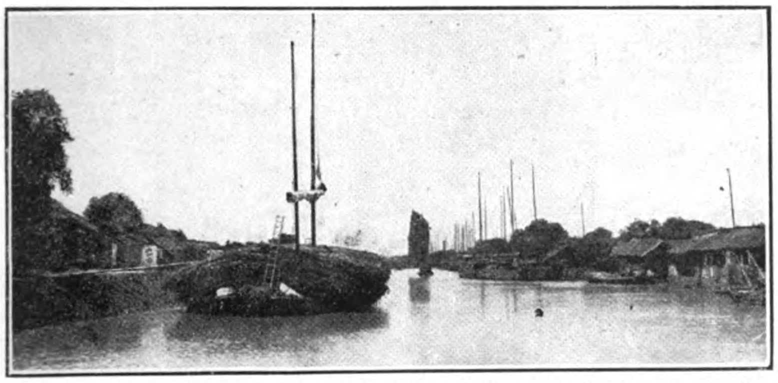
All the waterways connected with the Yangtze system, and the main river itself, have got into such a dangerous condition that conservancy questions should only be dealt with by most highly competent experts of wide experience; of whom a large number are now urgently needed to save the situation.



No. 1—Southern section of Grand Canal showing stone facing on left made by "Tiger" Hsu



No. 2—A dredger at work. Lacks power, but better than nothing



The Chinese obstruct traffic on the Grand Canal by lashing two junks together and loading them up as shown in this picture

The Chairman of the Ewo Cotton Spinning Company stated at the annual meeting held at Shanghai on December 22, that the normal profit on cotton yarn is Shanghai Tls. 5-6 per bale, while to-day most mills are making Tls. 50-60.

Chinese-American Bank Inaugurated

The first Chinese-American Bank to be launched in China—the Commercial and Industrial Bank of China—held its inaugural directors' meeting on December 11 at Peking, when there were present some forty odd shareholders representing in person or by proxy over 82,300 shares. Credit for the launching of the enterprise, so far as foreign capital is concerned, must be given to Mr. Galen F. Stone, of Messrs. Hayden, Stone & Co.; Mr. A. H. Wiggins, of the Chase National Bank of New York; Mr. E. B. Bruce, of the Pacific Development Company, who not only represents important interests in America but also in the Philippines and China; and Mr. V. Meyer, of Andersen, Meyer & Co. The Chinese side is represented by Mr. Hsu Un-yuan, who journeyed to America to effect arrangements with the capitalists mentioned, ex-Premier Chien Nung-hsun, President Hsu Shih-chang, ex-President Li Yuan-hung, ex-President Feng Kuo-chang, General Li Shun, Governor of Kiangsu Province, etc.

The following are the officers of the Bank:

Board of Directors: Chien Nung-hsun, Hsu Un-yuan, Fu Liang-tso, Chang Shou-ling, who is Director-General of the Wine and Tobacco Bureau, Lo Hung-nien, Chang Pi-ting, Galen L. Stone, Albert H. Wiggins, Edward B. Bruce, J. A. Thomas, late Manager in China of the British-American Tobacco Co., and S. B. Stevenson.

Board of Superintendents: Li Hsun, Sheng En-i, Stevenson and Messrs. Carson and Fenneman.

At a meeting of the Board of Directors, following the shareholders meeting, Mr. Chien Nung-hsun was elected president, Mr. J. A. Thomas, first vice-president, and Mr. Hsu-Un-yuan, second vice-president.

The total authorized capital of the Bank of $10,000,000 has been fully subscribed and the first call of 50 per cent. of the same $5,000,000 has been fully paid up.

Mr. Galen L. Stone, speaking for Mr. Wiggins, Mr. Bruce and himself, issued the following statement after the organization meeting of the stockholders:—

"It is a great pleasure to the American group, who have taken a half interest in the Commercial and Industrial Bank of China that the plans which have been worked out in connection with this bank have been carried through so harmoniously and successfully. It is our hope and expectation that the new bank will be an important instrument for strengthening the close friendship between China and America and the means of materially helping the commerce and industry of China.

"It is particularly pleasing to us that this enterprise was initiated in China and that the group of Chinese who have invited as to join with them in this bank represent such a wide and varied field of interests, and, on behalf of Mr. Wiggins, Mr. Bruce and myself, I take great pleasure in acknowledging the delightful hospitality which we have received from our Chinese partners in the bank during our stay in Peking and our great optimism for its bright future."

M. Obata, the Japanese Minister at Peking has protested to the Waichiaopu against the nation-wide boycott movement on two grounds: the movement is against the principle of the Sino-Japanese Commercial Treaty, and against the principle of international amity between two friendly nations. The Waichiaopu declared that the boycott movement is a spontaneous movement of the people, and the Government cannot be held responsible as long as the people do not violate any law, civil or criminal.

Sir John Jordan, the British Minister in Peking, has resigned and will return to England on or about the 20th January, 1920. Mr. Beilby Alston, the British Chargé in Tokyo, will succeed to the post.

Jardine, Matheson's New Office Building

Messrs. Jardine, Matheson & Co. will shortly begin the construction in Shanghai of a five-storey office building, which will front on the Bund with two flanking wings running down Peking Road on the one side and on the private roadway next the Yangtze Building on the other. The principal dimensions are approximately as follows:—The Bund frontage 173-ft.; Peking Road wing 161-ft.; and the south wing 147-ft. The average height is 80-ft., rising to the truck of a flag staff to 135-ft. The building will be of reinforced concrete faced with granite, and is designed to permit the addition of an extra storey at some future date.

The main entrance is in the centre of the Bund frontage, which leads through spacious outer and inner halls to the main staircase, flanked on each side by elevators and strong rooms. The staircase, 16-ft. wide, will be carried out in marble and bronze, the walls being panelled in the same materials. Separate entrances are provided for the offices on the Peking Road front, the machinery showroom, shipping offices, compradores, and the service staircases.

The architects have chosen a free rendering of modern Renaissance for their design. The two principal facades are

New Offices for Jardine, Matheson & Co., in course of construction at Shanghai

almost identical, consisting of dignified colonnades running through three stories supporting a heavy entablature, the whole resting on a heavily rusticated base. Much thought has been given to insure the highest possible fire-resisting qualities. Reinforced concrete, granite, steel windows, ample fire-escape staircases, and the very latest fire fighting appliances with special pumping plant and tanks will be installed with this end in view.

Three separate lavatory blocks with access from every floor have been provided for the .foreign and native staffs Provision has been made for the installation of an inter-departmental telephone system with private exchange, in connection with the public system. A specially designed insulated double roof, capable of being taken down and rebuilt when the additional storey is added, is included in the design. At the rear of the building provision has been made for seven garages, with quarters over them for 32 coolies, including bath accommodation.

Building operations will commence as soon as the old building is torn down, the work of demolition being well under way; and it is estimated that the new building will be ready for occupancy two years thereafter.

Messrs. Stewardson and Spence, Associates of the Royal Institute of British Architects, are the architects, and have been assisted by Mr. C. Luthy, S.I.A., Consulting Engineer. The illustration with this article is the reproduction of a sketch made by Mr. A. W. Graham-Brown, A.R.I.B.A., a member of the firm of architects.

The old building, which was erected in 1850, was a Shanghai landmark, and its passing recalls the great progress which has been made in China since its early days. The Rev. C. E. Darwent, in his handbook on Shanghai, estimates the original cost of the land at the time the old hong was built to be about £500, and, writing 20 years ago, estimates its value at a million sterling; and in the intervening years similar progress is indicated in the activities of the firm of "Ewo" (the Chinese name for Messrs. Jardine's) which the old building has housed. For example, here the plans for the first railway in China were formulated and carried into effect; cotton industries were conceived and organized; shipping lines expanded and extended their routes; and the Shanghai branch of the firm of Jardine's grew from an office with half-a-dozen employees to the great organization with its many ramifications which we know to-day. The firm which has played so great a part in the progress of Shanghai and will continue to hold its place in the future of China will be fittingly housed in the monumental structure which is now under way, although many China residents will view with regret the demolition of the stately old building which has meant so much to Shanghai of the past.

A comparatively new application of electric power in Shanghai, where coolie labor has hitherto prevailed, is the almost universal adoption of electrically-driven concrete mixers and hoists in connection with the erection of sky-scrapers and factories which are coming into being upon all sides. This application at present calls for the total of 360 horse power for its operation and is an unquestionable boon to the contractor who is thus provided with readily transported motive power with the very minimum of capital outlay, the operating motor being almost invariably hired from and maintained by the Municipal electricity department. Bearing in mind the enormous quantity of timber which has to be sawn up to provide "forms," "moulds" or "centering" in the course of the erection of every ferro-concrete structure, it is a remarkable fact that building contractors have only recently recognized the possibilities of power-driven saws as compared with the manually operated variety, the first electrically-driven installation of the former nature having lately been commissioned.

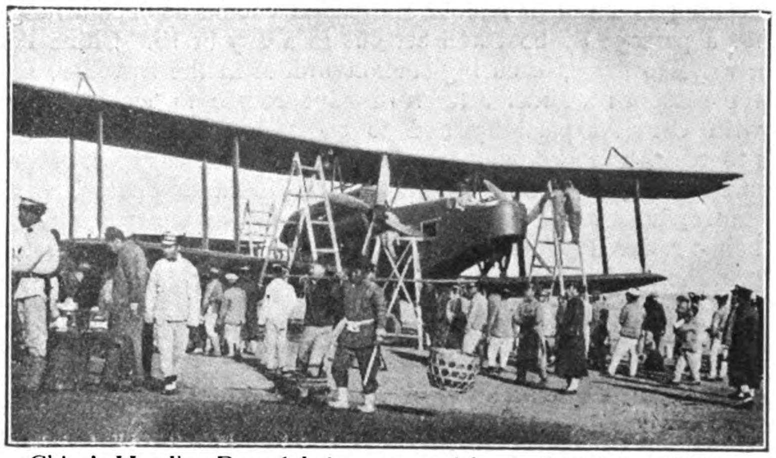
Handley-Page Work in China

The fuselage of the Handley-Page I.

On November 11, 1919, eight large packing cases containing the "H.P.I."—the first Handley-Page aeroplane to arrive in China—reached Nanyuan Aerodrome, Peking, and were duly unpacked in the mat-shed hangar, which the Chinese Government had built for the erection of the giant aeroplane. From that day the work proceeded steadily in spite of innumerable difficulties, until at 1.30 p.m. on December 6, the first of the 350 H.P. Rolls Royce engines was started. Five minutes later the second engine was also running, and within a quarter of an hour both had proved that, in spite of their five months of inactivity and a long journey by boat and rail, they were fully capable of doing the revolutions required of them. This speaks volumes for the Rolls Royce engines and for the skill of Mr. M. E. Mamin, whose task it was to install them in the aeroplane.

At 3.30 p.m. Capt. W. Mackenzie, an experienced pilot specially sent out to China by the Handley-Page Company, was satisfied that all was ready for the first flight and within ten minutes, the engines were opened out and the machine left the ground, after running 150 yards, and climbed to 1,000-ft. The aerodrome was circled and a perfect landing was made in spite of the very rough surface of the ground, which badly needs repairing if it is to be used for regular landing purposes. In addition to Captain W. Mackenzie, the machine carried Mr. T. A. Barson, Chairman of the Peking Syndicate, Ltd., which was responsible for the introduction of Handley-Page aeroplanes into China; Mr. A. J. Barson (Observer), and in the cabin, Lt.-Col. H. St. Clair Smallwood (Handley-Page representative) and Mr. W. W. Lamsdale, who has had the task of erecting the aeroplane under most difficult conditions.

A public exhibition flight was forthwith advertised to take place on December 8 and despite heavy wind and the presence of dust, the machine took the air with Mr. T. A. Barson, Mr. A. C. Henning, Mr. W. F. Tyler and four Chinese gentlemen as passengers, and attained a height of 2,000-ft., when a course was set for Peking. The wind at



China's Handley-Page I being prepared for its first flight at Peking

this altitude was blowing at about 60 m.p.h. but in spite of this the machine flew steadily, and the altimeter showed 3,000-ft. when it arrived at Yungtingmen. The visibility was very poor but a fine view of the Temple of Heaven and

its grounds was obtained. The machine was now headed back to Nanyuan, which was reached in an incredibly short space of time with a 60 m.p.h. following wind. A perfect landing was made once more after a 30-minute flight under conditions in which no aeroplane possessed by the Chinese Government could possibly have left the ground.

Unless accidents are to happen to both aviators and spectators arrangements must be made by which the spectators are prevented from wandering about the aerodrome and leaving no clear space for the machine to land in. An accident was nearly caused through neglect of this, and was only avoided thanks to the skill and presence of mind possessed by Capt. Mackenzie.

Taking into consideration the weather conditions, the weight of the machine (13,000-lbs.) and the difficulties under which it was erected the flight was clearly a praiseworthy performance.

On December 16 the aeroplane made its official test flight with representatives of the Chinese Government on board. The machine left Nanyuan aerodrome. Peking, at 2.15 p.m. with 14 passengers and 1,200-lbs. of sand making a total of well over 6 tons. After climbing to 6,200 feet three circuits of Peking and the surrounding country were made. Both the engines and the machine behaved splendidly throughout the flight in spite of the intense cold at 6,000 feet. Mr. K. Y. Wei, General K. Y. Tsing, and Mr D. T. Chow represented the Chinese Government on the test, the two former occupying the front seats. After landing they praised the machine most highly and expressed themselves as completely satisfied. The landing was made a few minutes before 5 o'clock. The load was 160-lbs. heavier than arranged for.

China's Great North-West

II.—From Paotou Across the Ordos Desert

By Rodney Gilbert

THERE are three ways of getting from Paotou to Ninghsia, the first city of importance which the traveller visits in North Eastern Kansu. Throughout the summer the big flat-boats which rely upon the current to carry them down the Yellow River, are towed up stream with heavy cargoes of merchandise from Tientsin and it is a simple matter to arrange for a passage, including food, for a few dollars. The journey usually requires at least twenty days and may take thirty-five or more—all depending upon wind and current. An alternative is to travel with pack mules or with carts following the northern and western banks of the river through Tengkou and Shihtsuitze, a journey of sixteen or eighteen days. A third trail, left open to the traveller who is properly equipped and who is not daunted by the word "desert," so often inaccurately descriptive of the country, is the camel-road across the Ordos Desert. Here again, once launched upon the wilderness of sand and grass, one has the choice of three roads—or rather the season makes the choice for him.

When I arrived in Paotou I imagined that I should find nothing to detain me there and that I should at once arrange for a passage by boat and set out in a day or so. China has a way, however, of curing such assurance in the traveller, and the seasoned wanderer learns in due course to accept delays with Oriental placidity and to greet good connections and progress by prearranged schedule with pleased surprise. I was twenty days in Paotou considering and discussing boats, carts, mules, horses and camels, the monotony of the proceedings being relieved by nothing but a five-day encounter with the prevalent influenza.

My old Mohammedan cartman who showed the common inclination of his kind to do something more than he was paid for, which is so rare in China that it always prompts a comment, appeared the morning after our arrival to announce that he had discovered my former innkeeper, a Moslem named Li Kung, and that he would shortly call upon me. In due course this Mr. Li arrived, and with him came the headmaster of the little mosque school on the hill, a middle aged man named Fei who had some Chinese scholarship and more polish in the Chinese way than most Mohammedans. I had known them both four years before and we were all genuinely glad to meet again. I was taken away to a dinner at Mr. Li's house at the head of the steep street which leads past the mosque, and I told them there of my ambition to get away on the road to Kansu at the earliest possible date. While we were talking, sitting cross-legged on a warm, rug-covered *k'ang* devouring great quantities of the boiled mutton which is everywhere the *piece de resistance* at Moslem gatherings, others of the "hui-hui" (Mohammedan) community dropped in, and before I departed I had developed in them all an interest in my transport which was exceedingly helpful to me and which never flagged up to the hour of my departure.

Boats were at first discussed, but heavy gales were blowing, the season was at an end and every day lessened the chances of getting away by water. Word came from a point 60 *li* up the river that the winds from the Wula Shan made progress impossible and that out of 40 boats which had huddled together at that point for protection from the storms, eight had been wrecked, while several men had lost their lives. Many boat owners who had been waiting for cargoes and passengers, intending to return to Ninghsia, sold their craft and bought animals, or returned on foot. After a day or so there were no boats, and all discussion of the question of water transport was dropped. For reasons which it would be tedious to explain, but which hinged largely upon military commandeering, carts were also out of the question and nothing remained, to one encumbered as I was with boxes, but camels.

Buying Camels to Cross the Ordos Desert

The camel season had opened, the animals were in from their summer grazing, and the market place was full of them, but the caravans had not begun to move. They were due from all directions, due to start from Paotou any day, and almost every hour for ten days, one or another of my Moslem friends would appear with the good word that a string was being made up, or was due from Kueihua, which would depart. One day the town suddenly became brilliant with Mongols, disporting themselves upon good ponies, or tall, quick stepping riding camels, and I learned that the Prince of the Alashan was due to arrive from Peking on his way back to his rock fortress in the desert. That afternoon he arrived with a long string of carts and a Mongol guard in antiquated Chinese cavalry uniforms, and I was given to understand by the local military

commander that it could easily be arranged for me to accompany him as far as Tengkou, or perhaps to Shihtsuitze. I made immediate preparations, only to learn a little later that the Prince was going off on a tangent into the desert to visit relatives, and as his course was well out of my way, a journey with him was out of the question. It was not until I had grown desperate and had made something of a nuisance of myself among my "hui-hui" friends that someone suggested that I buy camels myself and hire a man who knew the Ordos roads to take me on my way.

From that time my course was clear. Nearly all of my friends were incidentally buyers and sellers of animals and those who were not were nevertheless filled with that Moslem passion for animals which draws them irresistibly to every gathering where animals are exhibited for sale or for any other purpose. They all haunted the daily horse and camel fair, buying when bargains were offered, selling when the opportunity came, and watching every transaction with unflagging interest whether or not they bought or sold. In these devotions I joined them, and with their help made assiduous search for a man who knew the Ordos and who was willing to guide me across it. Days again elapsed, for while many knew more or less of the way, there were few who would even contemplate setting out with so limited an expedition as mine promised to be.

Finally one morning I encountered a boatman whom I had once known in Ninghsia and with whom I had subsequently weathered a twenty-two days' journey on the Yellow River. He was delighted to see me, and as he had just bought a poor, lean old camel he tried to persuade me to accompany him on the journey to Ninghsia by the roundabout cart highway. I tried in turn to coax him into taking the Ordos trail, pointing out the economy in time, but he said he was not familiar enough with the grass lands to risk it. After much debate he left me and in a short time returned with my friend the teacher, Fei, and a huge gorilla of a man, one-eyed, and black from exposure to the weather, who loomed modestly and awkwardly in the background while he was being described as the beau-ideal of all camel drivers, as the one man who knew every cow path in the Ordos, and as a cook of passing proficiency. I accepted all this with suspicion at the time, but I can forever testify that not only were these tributes within the bounds of truth but that many other virtues and qualifications which this man possessed were wholly omitted. He was the most satisfactory servant whom I have ever had in China, and by his great physical strength, his thorough knowledge of his business, his good nature and his constant solicitude for my comfort, he swept aside all difficulties and made of the Ordos journey, which might otherwise have been a gruesome ordeal, an exceedingly pleasant excursion.

Through the mediation of the teacher, Fei, a bargain was soon sealed by the terms of which the man whose name was Ting was to assist me in my preparations for the journey, guide me through the Ordos by the best available route, acting as both camel driver and cook, bring me safely to Ninghsia and there assist me in the disposition of my camels if I had reason to sell then. For these various services he was to receive the lump sum of five dollars and his food. With this arrangement completed the last serious difficulty was removed, for camel buying through the medium of my numerous Mohammedan friends and acquaintances presented no difficulties. The material from which we had to select was unlimited and varied. Every morning there were two or three hundred camels fresh from grazing tied up in the market place and the owners were mostly Mongols, while the middlemen were Mohammedan friends of mine and of my friends. I knew nothing whatever of a camel's fine points, but I was taken by Fei along lines and lines of them and was shown all manner of beasts of all sizes and ages, ranging in approximate value from $20 to $80. After having seen them all I knew no more of them than at the beginning, so placed myself entirely in Fei's hands and asked him to find me two moderately good ones at a fair price which I could sell in Ninghsia, if need be, without serious loss. One after another was led out, made to kneel, mounted by the astute schoolmaster and ridden up and down before a multitude that hung upon the margin of all such deals. In less than an hour I was the proud possessor of two animals which seemed to me to be particularly handsome and clean limbed. One was a mare between three and four years old, described as a riding camel, and certainly very sprightly in her gait, and the other a gelding seven years old which showed a disposition to complain vehemently whenever he was approached. As soon as the purchase was completed and the price stipulated, the problem of housing and feeding the animals came up, for they are not particularly welcome in ordinary inns, and a little man who looked half Mongol and who was clad entirely in dirty sheepskins was produced and described as a camel-herd. It was his office to take all newly purchased animals unprovided with a home out into the grass lands and to take care of them until they were wanted. I wrote my initials on them in red paint and they were led away. One of my friends then assisted me in the purchase of camel saddles, ropes, and felt mats, and we set about buying a considerable stock of provisions. When all was ready, the camel driver Ting appeared one afternoon with the man in sheepskins and the two animals, and we prepared to leave in the morning. The Mohammedan community called that evening *en bloc* and introduced a wizened little fellow named Wang, a native of Ninghsia, who had bought a camel which he proposed to ride and who wanted to accompany me. As he had been across the Ordos three or four times a year for thirteen years, he seemed a desirable companion, so I agreed to travel with him. It transpired later that he desired to accompany me so that he could get his animal past the Yellow River customs free of charge, which I resented when I discovered it, but he later proved such a genial and useful travelling companion that I had no reason to regret taking him with me.

At this general gathering of the Moslem clans there were several interesting diversions. While we were all standing in the inn yard admiring the two animals in the fading light of an extremely cold day, a little man with a tuft of chin whiskers, clad in the thinnest of summer cotton clothes, came into the courtyard and made an elaborate bow to my friend Li. For a moment nobody seemed to recognize him and then a storm of objurgation was heaped upon him which was completely past my understanding. He spread out his hands and defended himself with an eloquence which was equally unintelligible and it was not until later that I learned the *pros* and *cons* of this encounter. It was a long time before the atmosphere cleared and the conversation was carried on at a pace which I could follow. It then transpired that, twelve years before, this little man had come to Paotou from Kansu, arriving there destitute, and that the Mohammedan community had provided him with a camel, some merchandise and travelling funds. He had gone towards Kalgan and had never been heard of afterwards. This was his first reappearance and again he came to throw himself upon the mercy of the community having no possessions or baggage other than the summer clothes in which he stood. His appearance at first aroused the indignation and wrath of the whole assembly, then they saw something comic in it and later perhaps something pathetic in the spectacle of a man standing out in the snow in the biting wind with his very flimsy summer clothes blowing about him, for the next day I learned that he had been provided with twenty catties of flour, a suit of wadded cotton clothing and some meat, and had set out for Kansu with a number of returning boatmen.

Dramatic incidents followed closely upon one another that afternoon, for scarcely had the excitement aroused by the prodigal's return subsided than two Mohammedan muleteers trudged in, walked up to a man who was sitting on several sacks of pepper and said to him in a matter of fact way so that all the courtyard could hear: "We have just passed through your village to-day and we stopped off here to tell you that your wife died last night." One hears frequently that the Orientals accept such tidings with nonchalance or with fatalistic philosophy, but the person on the bags of pepper made a clear demonstration that this is not always so; for without asking any questions or making any comment, he leaned back against the wall and emitted a hair-raising howl. With absolute indifference to those who came and went he maintained precisely the same position and yelled with the same volume for at least half-an-hour. The two bearers of ill tidings gaped blankly at him for quite some time, then looked helplessly at each other and hurried out of the place.

Off on the Long Trail

The following morning my boxes were sewed in felts and were then roped with a mesh of complicated knots known only to camel drivers, and culminated finally in two loops on each box which are brought together from the back of the camel and are fastened with pins when the animal is loaded. The provisions for the journey, which included twenty catties of flour, twenty catties of bread baked with mutton fat to keep it fresh, five catties of mutton, a catty of tea and some oil and vinegar, were packed in sacks and the animals were led out and loaded. Just as everything was roped in place, the Mohammedan community once more appeared in solid phalanx bearing large trays of perishable edibles done up in the usual red paper which the camel driver Ting looked upon with dismay as the stowing of these gifts entailed the loosening of many ropes, much repacking and reroping. It was almost noon before we were prepared to go, and as the man Wang who was to travel with us had not yet appeared, we set out without him.

Paotou is fifteen *li* from the north bank of the Yellow River. A straggling village known as Nanhaitze, which has a large boat population in summer, might be termed the port of the town. There is a police *yamên* there, a *likin* office, a small temple or so, a mosque, and there are also a few well built farmhouses which serve as inns for travellers who have occasion to spend the night. Just as we left Paotou a dust storm came up and before we had gone a hundred yards our diminutive caravan was completely lost in a yellow swirl that blotted out the whole landscape. In spite of this we made good time and arrived at the riverbank in less than two hours only to find the big ferryboat moored securely to the bank with no one in charge. Upon inquiry we learned that the boatmen had not been able to manipulate their craft in the strong wind and had given up for the day. So there was nothing for us to do but spend the night at Nanhaitze. Ting led the way down to a farmhouse where dwelt a Mohammedan by the name of Yang who welcomed us heartily, helped with the camel packs and then introduced us into a large room which was already crowded with boatmen. The innyard was filled with camels and ponies and I soon learned that the animals had been purchased by a number of Nanhaitze boatmen who found it impossible to return by water to Kansu and who were preparing to set out in the morning by the cart road. Upon the appearance of my follower Ting, however, their plans underwent a rapid change. He was greeted with fervour and was immediately cross-examined by all as to what road he intended to take. When he had told them that we were going across the Ordos, a most spirited discussion followed and in a very few minutes it was decided that they would all travel by the same route, trusting their livestock and their fortunes to the expert guidance of my one-eyed follower. A little later in the day my fellow traveller Wang Chao-cheng rode in on his camel caked with dust, and bulging with his packages in red paper similar to those that had been inflicted upon me at my departure. His arrival and his announcement that he was to be one of the party confirmed all the others in their determination to accompany us, for he evidently had almost as great a reputation as my own Ting as an authority upon roads in the grass lands. Other travellers arrived later in the evening and by nightfall when all had eaten, there were so many claimants to space on the red-hot *k'ang* that I secured farmer Yang's permission to sleep on top of a high flour chest. I woke several times during the night and though the big guest room was dark there was still an animated discussion going on on the *k'ang* as to routes and equipment. From time to time Ting raised a booming voice of authority and silenced all dispute by settling with a word the various points at issue.

In the morning when I tried to make some settlement with the farmer, he refused payment, saying that my friends in Paotou were also his friends and that they would resent it if they thought he had been inhospitable enough to take money from me. All the guests of the inn went with us to the river front where a ferry was waiting and the bags and bundles were at once loaded into the two end compartments of the boat. The central compartment, reserved for animals, seemed to me rather small for the six camels, two ponies and two donkeys which were to occupy it. The donkeys and ponies boarded the craft rather meekly and were herded into a corner, but the camels objected with more than customary obstinacy and it was necessary in every case to carry them on board by main force. One man went ahead with a nose rope and pulled as hard as he dared, while the animal squealed and bellowed. Two men would then take the camel's two hind legs and push them forward until the animal was balanced on his fore toes with his rump high in the air and his neck distended to its greatest possible length. It was not until he was over-balanced that he would lurch forward and put his two fore feet in the boat. Then two more men would seize his fore legs, he would be lifted completely off his feet and carried forward until his hind legs could be dropped inside the boat. With a little more tugging and urging he would then be got into the position he was supposed to occupy and would be made to kneel. Once down loops of heavy rope were passed over his knees, and his shins were roped tightly to his thighs making it impossible for him to rise. This performance had to be repeated with each camel and it took a full hour to get all six animals in place. They continued to squeal their comments upon this outrage all the way across the river and were almost as hard to bring ashore as they had been to load. The adjusting of packs and baggage took another half hour but at last the caravan was made up on the Ordos side of the river with no more water to cross for a good many days' journey and Ting One-eye, as he was affectionately termed by those familiar with him, set out in the lead at the camel driver's characteristic waddle by means of which they set an even pace which never varies and from which one can judge distances, or time where the distance is known, with surprising accuracy.

Joys of Camel Riding

We had scarcely left the river bank when Ting struck out across the mudflats without heed to roads or paths in a direction which I ascertained by the compass to be due southwest. From that time until we saw the Yellow River again we scarcely ever varied from this course by more than a degree or so. I was told that to the east of our course ran a trail through much better country and that to the west there was also a road known to camel drivers upon which were more

wells and springs and which was therefore travelled in dry seasons when the wells on our course had failed.

The first day's journey was not particularly interesting. It was across flat damp lowlands which are periodically flooded by the Yellow River and upon which lay many pools of muddy water. On the higher knobs of ground there were a few farmhouses with small groups of trees and from time to time we came to stretches of grazing lands upon which herds of cattle and horses were feeding. The Wula Shan stood out in the west grey and metallic in the bright sun light while to the south a long low ridge of sand hills apparently running from northwest to southeast lay across our path. There were no landmarks and no trails but we kept on southwest steadily as a ship on its course, occasionally following cart roads a short way or falling into the wake of previous caravans, but without regard to their turnings or windings. After walking for some distance, I decided to ride one of my camels, and as the animals had all been linked in a chain the whole caravan was stopped and I was hoisted upon the leader. I had watched the others mount and it looked easy, but my own awkwardness when I came to emulate my fellow travellers astonished me. Needless to say one does not leap into the saddle of a camel. The animal's head is pulled down within a foot of the ground, the rider puts his left foot just behind the animal's ears, takes a good hold on the saddle and gives a spring. At the same time the animal throws up his head with a snort propelling the rider towards the rear, and the inexperienced will inevitably find himself sprawling on top of the pack on his stomach with his head and arms dangling over the animal's tail. The agile and experienced rider is supposed to turn in the air and land sitting astride the pack. The position in which I landed upon my first attempt occasioned a good deal of amusement and some little concern for I seemed in danger of tobogganning off the rear of the camel. With some assistance, however, I managed to right myself and the caravan progressed.

About noon we came to a small spring in the midst of a rich strip of grass land and Ting suddenly faced about, grinned up at me and said " sok " to the animal whereupon the world collapsed under me in a series of backward and forward lurches. At the first forward collapse I rolled helplessly into the arms of my one-eyed giant and was set upon my feet with much care and solicitude. I then discovered a number of new and original chafes and aches for which no amount of pony riding had provided a forewarning.

Three or four copper kettles were promptly produced, a felt mat was spread on the ground for me with a box on end to break the wind and in a few minutes tea and hot bread were forthcoming on all sides. The camels were turned loose to graze for a time and it was not until mid-afternoon that we set out again. My Mohammedan fellow travellers had planned to travel until three or four the following morning but an hour after dusk when we arrived at running water and a cluster of farmhouses my complaints against the cold and upon the stiffness of my back and the blistered condition of those parts of my frame which were adjacent to the pack saddle moved the caravan to a conference, and it was decided that we should camp there for the night. The place was called Taolaohancheng and was eighty *li* from Nanhaitze. For some time we had been travelling through sandy country productive of very little but desert vegetation and for our camp a clearing of dry sand without briars or thistles was secured, and all our goods and chattels were spread out on the ground. By this time I had discovered that apart from myself, the only gentile, and the above-mentioned six camels, two ponies and two donkeys, there were twenty-six stalwart Mohammedans in our party. In return for Ting One-eye's guidance and expert advice upon all matters, they were only too eager to give him every assistance and I soon learned that instead of one I had equipped myself with twenty-six able-bodied servants. As soon as the camels and ponies had trotted off to graze, the men set out after fuel. One or two of the older fellows obtained a supply of water from the stream and in less than ten minutes from the time of our arrival there were five bright fires going and as many circles of animated conversation. It was the 21st of October and the weather was exceedingly cold. A high wind had come up at sunset and there was neither tent nor shelter in sight but there was no depression of spirits, and, though some of our party were poorly equipped with clothing and bedding, there were no complaints against the weather. In spite of an unprecedented state of soreness, I found something exhilarating in the good spirits of my companions and by the time we had consumed many gallons of tea between us and had scoffed five large boilers of mutton and noodles I was fully convinced that I was a born nomad and that all the years spent under roofs had been years wasted. The following morning, however, when the entire encampment got to its feet at 3.30 in biting wind, and talked of moving on, a few doubts of my adaptability to this nomadic outdoor life crept into my mind. Considering that we were sleeping under the stars, and very bright stars they were, we were not at all uncomfortable. All the pack-saddles with all the available baggage we piled in a long row on the windward side of the camp and twenty-seven beds were made up on the lee side, heads in and feet out. The exact centre of the long row was saved for me as being the warmest possible spot and I was rolled up in my blankets and tucked in by half-a-dozen hard-handed boatmen. Ting was the last to bed, as he was always the first up and before turning in he collected all the canvas bags, tarpaulins, leather saddle covers and stray bits of felt which he could find and made a continuous roof over the twenty-six prostrate pilgrims after which he found a place for himself.

Part III follows in February issue

S.S. "Henrik" Launched at Shanghai

The New Engineering and Shipbuilding Works, Ltd., launched on December 22 at their Yangtszepoo Works, Shanghai, the s.s. *Henrik* a steamer of similar type to the s.s. *Hero* and *Hydra II* built by the same Company the previous year. The new vessel is the first of a contract of six single screw steel steamers now building for Norwegian account. The dimensions of the steamer are as follow : Length overall, 354ft. 6in. ; length B.P., 242ft. 6in. ; beam, 37ft. 0in. ; depth moulded, 17ft. 0in. Deadweight carrying capacity, 2,050 tons. The vessel is built to the highest class of the Norwegian Bureau Veritas, and is fitted with triple-expansion surface condensing engines indicating about 1,100 H.P. and two cylindrical multitubular boilers built for a working pressure of 180-lbs. per square inch.

The main engines and boilers, as well as most of the auxiliary machinery, were built by the New Engineering and Shipbuilding Works, Ltd., at their Yangtszepoo Works. The steamer is constructed with very large hatches to facilitate the handling of bulky cargo.

What are stated to be the largest locomotive works in the British Empire have recently been opened at the Scotswood Works of Sir W. G. Armstrong, Whitworth & Co., Ltd. The first locomotive built was tried out on November 12, the occasion being regarded as an epoch-making ceremony in the industrial history of Great Britain. A large number of guests attended the ceremony and were highly appreciative of the strenuous changes which had been made in the works from the massed production of shells to that of locomotives. Mr. R. B. McColl, the Manager, is given full credit for the transformation carried out.

Shanghai Electric Construction Company

Progressive Shop Methods used by a Far Eastern Tramway System

THE photographs published herewith are views of the equipment in the workshops of the Shanghai Electric Construction Co.

In the electrical shop all repairs to armatures, including stripping down the cores, re-building and re-winding, are done, the coils being made on the premises.

New commutators are also built up here.

Field coils are stripped down, old insulation removed from the wire and the wire re-covered with insulating material, the coil then being re-wound.

All repairs to controllers, including general overhauling every 18 months are done here.

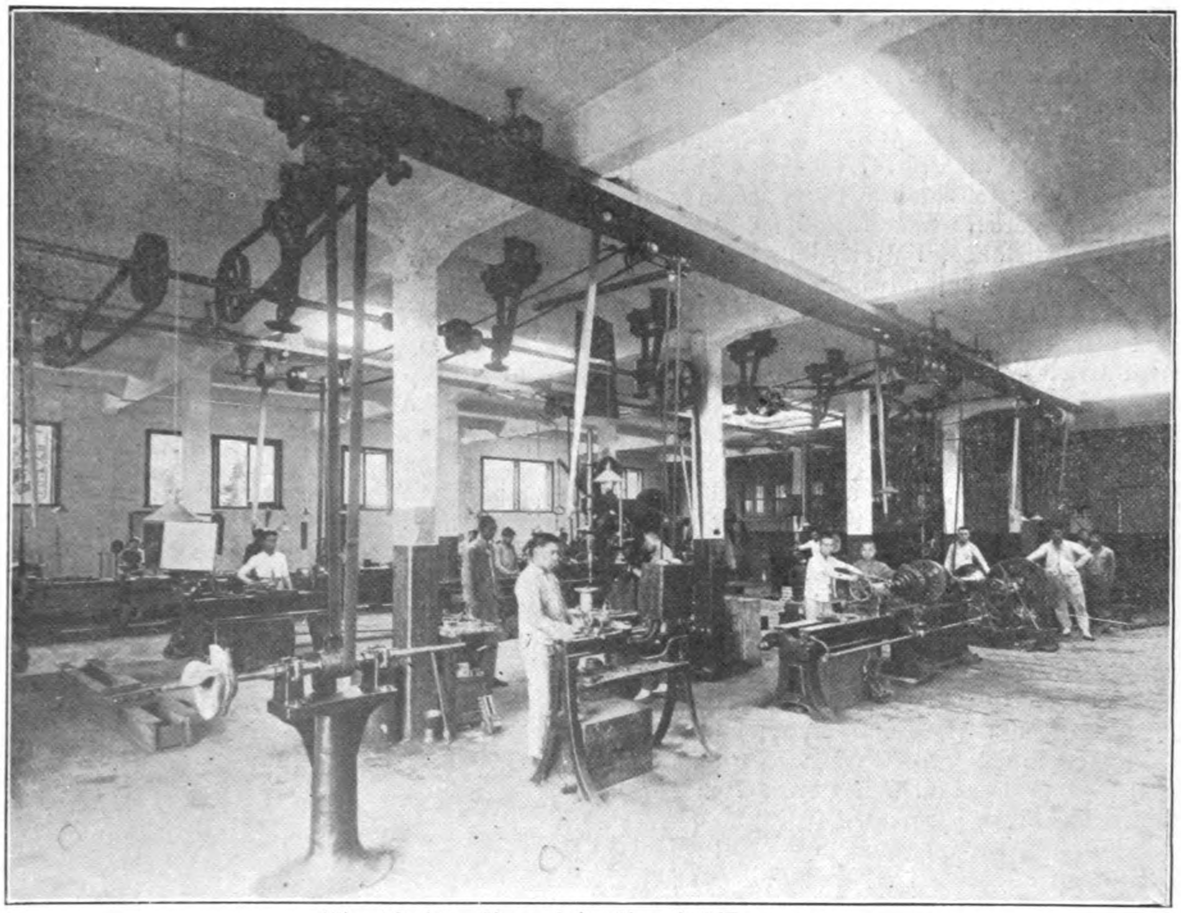
Automatic switches are tested every time the car is given a " mileage " overhaul; the switches are overhauled, cleaned and set to blow at 120 amperes.

Before leaving this shop, everything is thoroughly tested with instruments specially obtained for the purpose. The tests include—

Bar to bar test
Insulation and resistance tests.

In the machine shop the machine tools are much the same as in any ordinary shop, with the exception, perhaps, of the two hydraulic presses and the gas ring.

One of the former is for pressing tyres on to railless car wheels, the pressure being low, usually about 350-lb. The other press in the centre of the shop is used for pressing tram-car wheels on to axles, the pressure in this case being comparatively high, about 25 to 40 tons.



The Machine Shop of the Shanghai Tramways

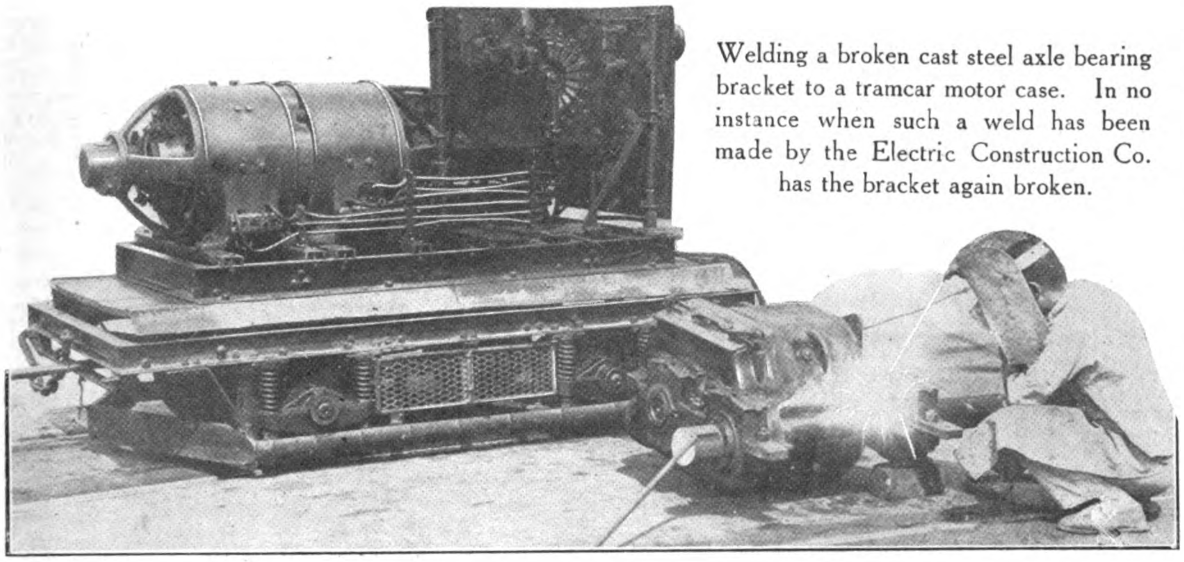
The Electrical Repair Shop of the Shanghai Tramways

The gas ring is employed for shrinking tyres on the cast iron centres of the tram car wheels. A water ring, immediately above the gas ring, comes into action immediately the tyre has expanded sufficiently to allow the wheel centre to drop into its place, numerous jets of water playing on the tyre all round its circumference. The effect is quick cooling and slight hardening of the tyre, thus giving longer life.

In the moulding shop all brass casting work is done, the capacity of the shop being such that the Company can supply all brass castings required for 167 cars, including trolley wheels, and also all fittings for the overhead line work.

Electric Welding in Shanghai

In order to eliminate one of the most troublesome of track difficulties, the Shanghai Electric Construction Co., Ltd., which controls the Tramways in the International Settlement, experimented some years ago with different methods of welding the rail joints electrically, and, in due course, devised a method whereby the old fish-plates could be successfully and cheaply welded to the rails. A small welding set, mounted on a truck, to allow of its easy transit to any part of the lines was used for over two years for welding rail joints and building up rail heads which had become "cupped" at the joints. These hollowed places were due to the weakness of the purely mechanical joint, the bolts holding the fish-plates elongating and allowing a certain amount of looseness to develop where rigidity was most essential.



Welding a broken cast steel axle bearing bracket to a tramcar motor case. In no instance when such a weld has been made by the Electric Construction Co. has the bracket again broken.

It was found, during the Company's early experiments in electric welding, that the deposit on the rail head should contain at least as high a percentage of carbon as the rail itself in order to secure a lasting weld, by ensuring proper amalgamation of rail metal with that deposited from the electrode. In order to obtain this result, experiments were conducted in the works to produce an electrode which would leave a deposit containing about .5 per cent. to .6 per cent. carbon, a little higher than in the rail. Various methods were tried, some meeting with a certain amount of success until finally efforts were concentrated upon perfecting the method ultimately adopted. The results obtained from the first of these electrodes, when tested mechanically, varied in carbon from .35 per cent. to 1.35 per cent. The Company finally decided to adopt, for rail work, the electrode giving a deposit containing .6 per cent. carbon, which is at least .1 per cent. higher than in the rail, the object being to compensate for the superior hardness of the rail due to cold rolling to which it is subjected not only in manufacture but in service. The welded-up parts on the rail heads are standing up well. The mild steel of which the electrodes are composed, if not coated with the composition in which they are dipped, would only give a deposit (if used as electrodes) of soft iron—quite useless for such welding work.

These electrodes are used generally in welding the fish-plates to the rails, as well as the rail heads, in order to ensure completely satisfactory results, and experiments with wheels have also proved satisfactory.

Sewage System for Shanghai

Shanghai has no sewage system, but soon will have. The Works Committee of the Shanghai Municipal Council has approved the main features of a scheme for sewage disposal so far as the Central District, east of Honan Road, Shanghai, is concerned, on the recommendation of Mr. Charles H. Godfrey, Municipal Commissioner of Public Works. Mr. Godfrey has been carrying out experiments for some time on the lines of the activated sludge process with a primitive plant and has been able to deal with 4,000 gallons of sewage a day. He recommends that a qualified chemist—a specialist—be engaged to deal with certain aspects of the system, and that the recommendation of Professor Fowler in this connexion be taken. The preliminary scheme he recommends to be initiated will deal with sewage in the most important section of the Central district until a comprehensive system for the whole Settlement can be undertaken. The sewers will be laid along the centres of the roads in the area to be dealt with from four to ten feet below the surface, and the sewage will be pumped through the mains to an underground concrete collecting tank, whence it will be forced by centrifugal pumps—installed and working in an underground chamber—through a nine inch pumping main, with a head of 90 feet at the summit and with the pumps designed to allow for a twelve feet head on arrival, to the Sewage Treatment Works. The Treatment Works will be operated on the activated sludge principle, and the preliminary scheme as submitted will allow of the treatment of 600,000 gallons daily. The estimated cost of the whole work is between Tls. 160,000 and Tls. 200,000. This scheme, which has been approved, is designed to relieve the very severe pressure which is already being experienced in emptying cesspools by pumps and carts. Mr. Godfrey will probably visit Singapore to investigate the high pressure water system there, and Rangoon to investigate the work of the pneumatic ejectors.

Motor-cars have made their appearance in the distant city of Nanning, Kwangsi Province, according to reports, the officials owning them driving through the narrow streets to the terror of the populace. The cars will lead to decent roads —that is certain. Officials throughout the whole country have realized the " face " and the pleasure which a car gives, and there is not an official who, like a certain small boy crying for a certain soap, will be happy till he gets one. Incidentally it may be mentioned that it is proposed to build a model jail at Nanning!

The Civil Governor of Honan Province is emulating the Civil Governor of Shantung, and is endeavoring to institute reforms in industry and commerce, conservancy, agriculture, education and taxation, and effectively to prohibit the use of opium.

Engineering, Financial, Industrial and Commercial News

RAILWAYS

New Japanese Railway Loan.—Through the indefatigable efforts of the Japanese railway authorities, it is reported, the consent of the Finance Department was finally obtained at a Cabinet Council on December 9 for the issue of railway loans, amounting to Y.100,000,000, for the fiscal year. The total amount of the Railway Budget for the next fiscal year is said to have been fixed at Y.170,000,000. Of the total sum, the expenditure of Y.70,000,000 will be met by the increased revenue resulting from the projected advance in passenger fares and other resources.

Steamers to Connect with Shantung Roads.—The Japanese Imperial Railway Board has made an announcement relating to the arrangements made for the connection of the railway service between the Imperial Railways and the Shantung railway. The junction is to be made through the ships of the Nippon Yusen Kaisha, the Osaka Shosen Kaisha and the Harata Kisen Kaisha. The new arrangements will come into force on January 1.

Lunghai Loan.—The Chinese Government has sanctioned the continuation of negotiations with Belgian capitalists with regard to the Lunghai Railway loan, which have been suspended on account of the war.

Taoching Railway Extension.—According to the Japanese newspaper printed in Chinese at Peking the loan for the extension the Tao-ching Railway to Menghsien is for the construction of a branch line from Chinghua to Menghsien, being the forerunner of an extension of the line to Fingyang in Shansi from Chinghua According to the journal, the loan is £350,000, interest at 7½ per cent. per annum. It is secured by the guarantee of the Chinese Government and the entire property of the railway. In case the revenue of the railway to be constructed is insufficient to pay the capital and interest, the Fu-Chung Corporation shall make the deficiency good by deducting the amount from the freightage on coal to be paid to the Chinese Government. The capital is to be amortized in 3 years after it is opened to traffic. The agreement was signed on October 30, 1919.

Overhead Railway for Kobe.—The Japanese Imperial Railway Board has decided to erect a quadruple overhead line from Nada to Takatori Station with an 18-foot road on both sides of the line. The height of the line will be from 18 feet to 15 feet, the former where tram-cars pass underneath. It has been decided that the extension sections of the Hanshin Electric and the Hanshin Kyuko lines shall be low-level, the Kyuko line being allowed to have a station at Kano-cho, Kobe.

South China Railway Scheme.—The Canton Military Government has despatched a circular telegram to the provinces explaining the scheme which was formulated at a political meeting to establish a Union Bureau for the railways of eight Southern provinces. General Tsen Chun-hsuan will be elected Director of the Bureau and the provincial authorities will be the Vice-Directors. At a meeting of the Canton Administrative Council recently it was decided to create a directorate for the building of railroads in the South-western provinces, with Mr. Tsen Chun-hsuan as the chief director and the military and civil governors of the various provinces as associate directors. The plan for the development of railway construction takes in eight provinces which are entirely or partially under the control of the Constitutionalist forces, they are Szechuan, Yunnan, Kweichow, Shensi, Fukien, Hunan, Kwangtung and Kwangsi.

Purchase of Rolling Stock.—According to the "Shuntien Shihpao" the Peking Department of Communications concluded a loan with the British and Chinese Corporation, which having been submitted to the Cabinet meeting held on November 27 was duly approved. The amount is two million dollars bearing annual interest at eight per cent. The principal is to be repaid in monthly installments of $100,000, commencing from December, 1920. The loan is secured by the surplus profit of the Kin-Han Railway. The proceeds, says the Peking daily, will be used for the purchase of 12 railway engines, 90 goods cars, and for the improvement of the Canton-Hunan Section of the Canton-Hankow Railway.

Ningpo Railway.—It is reported that steps are being taken to resume work on the Shaohsing section of the Shanghai-Hangchow-Ningpo Railway. For five years not a sod has been turned between Hangchow and Dzaongo. The raised mud track for six or seven miles on this side of the Dzaongo River was thrown up and the two banks and one mid-river concrete pillar for the railway bridge across the Dzaongo River were constructed before the war and have remained at a stand-still ever since. The bridge is to be a two-span one. The track between Dzaongo and Ningpo, however, has been improved considerably. The stones forming it, previously about the size of ostrich eggs, have been broken as small as hen's eggs. Moreover the stations and buildings have been improved.

Chinese Eastern Railway Representative.—Dr. Yen Teh-ching, Chinese representative on the Chinese eastern railway, has left Harbin for his post of Managing Director of the Canton-Hankow line at Hankow. The Peking Government has selected Dr. C. C. Wong, former director of the Peking-Hankow railway, as his successor. Dr. Wong has just returned from his railway investigations in Europe.

Freight Rates on Chinese Eastern Railway.—The Allied Technical Board has resolved that rates on the Chinese Eastern Railway should be based on the gold standard. The Board further resolved to fix the same rate for Romanoff, Russo-Asiatic Bank and green Karensky notes, which means unification of all notes, and a change is to be made, therefore, in the present rate of Romanoff notes compared with gold notes. Instead of being ten Romanoffs to one gold note it will be sixty, which was the rate previously fixed for green Karenskys. Twenty-five per cent. of the amount charged for freight will be paid in small Romanoff notes, which will secure for the railway a sufficient supply of these notes to meet current expenses and salaries. There is a certain amount of opposition on the part of the Chinese authorities, but it is hoped to overcome this in the near future with general satisfaction. The Chinese Government wired to Mr. Li Cha-kao, the Chinese delegate to Siberia, to the effect that as the Chinese Eastern Railway is entirely in Chinese territory it cannot be considered in the same light as the Siberian Railway. Should the Powers take the same measures to maintain the Chinese Eastern Railway as the Siberian Railway the delegate is instructed to make careful explanations on behalf of the Government, and take strong measures to protect the rights of China.

General Hsu Shu-tseng (Little Hsu) proposes the issue of a large domestic loan to cover the cost of the extension of the Peking-Suiyuan Railway to Urga It is stated, says Reuter's Peking correspondent, that he is arranging that Japanese funds shall participate in the loan.

Akashi Electric Line Extension.—The proposed extension of the Akashi Electric line to Minatogawa has been rejected, in anticipation of its municipalisation at the time of the contemplated annexation of Suma to the city of Kobe.

New Lung-hai Railway Director.—The Ministry of Communications has appointed Mr. Li Ta-show as Director of the Lung-hai railway, in succession to Mr. Sze Chow-tseng, who is being sent on a mission to Europe. Mr. Li Ta-show has been General Administrator of the Peking-Hankow railway for some years.

Hankow-Szechuan Railway.—According to a Japanese report the Hankow-Szechuan Railway has signed a loan agreement for $1,000,000 with a certain British syndicate. The Loan is a short term one and the money has already been paid over. The terms of the loan are not stated.

Japan Utilises Shantung Railways.—A through traffic service for passengers and their baggage between Shantung and Japan over three different lines, namely, the Imperial Government Railways of Japan, the steamer lines between Sannoyima (Kobe) and of Moji to Tsingtau, and the Shantung Railways, has been arranged to begin on January 1. The available period of the through tickets is fixed at 30 days, including the day of issue, and the steamer connection for both passengers and baggage is to be made at Sannomiya, Moji and Tsingtau.

TRAMWAYS

Projected Tramway at Canton.—The Kwangtung Tramway Company, which holds the franchise for the building of a tramway at Canton, had its share subscription books open till December 31, 1919. The books were originally to have closed at the end of October. Mr. J. P. Hing, representative of the Company, is on his way to America to make arrangements for the purchase of the plant. The capital required is $5,500,000, which appears to be slow in coming in, though it was announced that over $2,000,000 had been subscribed in November by Canton and Hongkong Chinese capitalists.

Tramway Project for Wuchow.—Gen. Lu Yung-ting has been busy devoting his attention toward the industrial development of his province. His various industrial schemes include the encouragement of cotton growing, the development of Nanning as a commercial center, and the improvement of Wuchow port which is to be provided with wide maloos and the laying out of a tramway, as Canton.

Tokyo-Osaka Tramway.—The project of laying an electric railway between Tokyo and Osaka under the name of the Nippon Denki Tetsudo Kaisha is still being pushed. It is now reported that under the names of an increased number of promoters an application has been sent to Mr. Hara, the Premier of Japan, for permission to put the plan into effect. The anticipation of the plan affecting the revenues of the Government Railways has been the chief cause of year after year passing without official permission being granted, and the promoters have now evidently become impatient. It will be interesting to see what decision the Government comes to. It appears to be certain that permission will be granted, says the "Japan Chronicle," but whether there willl be any hampering restrictions cannot be foretold.

Shanghai Tramways Returns.—The following is the Traffic Returns of the Shanghai Tramways (Foreign Settlement) for the weeks mentioned, with figures for the corresponding week in 1918 :—

Week ended November 26, 1919.

	1919
Gross Receipts	$44,058.48
Loss by currency depreciation	11,183.47
Effective Receipts	$32,875.01
Percentage of loss by currency depreciation	26.73
Car Miles run	90,945
Passengers Carried	1,989,990
	1918
Gross Receipts	$41,683.62
Loss by currency depreciation	9,681.43
Effective Receipts	$32,002.19
Percentage of loss by currency depreciation	24.34
Car Miles run	85,531
Passengers Carried	1,877,911

Week ended December 3, 1919.

	1919
Gross Receipts	$40,988.00
Loss by currency depreciation	10,283.70
Effective Receipts	$30,704.30
Percentage of loss by currency depreciation	26.37
Car Miles run	89,328
Passengers Carried	1,857,929
	1918
Gross Receipts	$35,754.85
Loss by currency depreciation	8,307.09
Effective Receipts	$27,447.76
Percentage of loss by currency depreciation	24.44
Car Miles run	79,839
Passengers Carried	1,639,880

Week ended December 10, 1919.

	1919
Gross Receipts	$44,086.32
Loss by currency depreciation	11,150.13
Effective Receipts	$32,936.19
Percentage of loss by currency depreciation	26.51
Car Miles run	90,560
Passengers Carried	1,990,910
	1918
Gross Receipts	$32,337.51
Loss by currency depreciation	7,514.57
Effective Receipts	$24,822.94
Percentage of loss by currency depreciation	24.59
Car Miles run	76,586
Passengers Carried	1,476,749

Week ended December 17, 1919.

	1919
Gross Receipts	$41,155.79
Loss by currency depreciation	10,322.18
Effective Receipts	$30,833.61
Percentage of loss by currency depreciation	26.47
Car Miles run	89,020
Passengers Carried	1,853,299
	1918
Gross Receipts	$32,787.38
Loss by currency depreciation	7,618.38
Effective Receipts	$25,169.00
Percentage of loss by currency depreciation	24.60
Car Miles run	76,901
Passengers Carried	1,492,801

Week ended December 24, 1919.

	1919
Gross Receipts	$41,595.69
Loss by currency depreciation	10,490.62
Effective Receipts	$31,105.07
Percentage of loss by currency depreciation	26.61
Car Miles run	88,732
Passengers Carried	1,858,886
	1918
Gross Receipts	$31,841.93
Loss by currency depreciation	7,421.78
Effective Receipts	$24,420.15
Percentage of loss by currency depreciation	24.72
Car Miles run	74,708
Passengers Carried	1,440,525

MOTORS

Motors on the Amur.—The Chinese Hsutung Navigation Company, which operates on the Amur River, when it can, is endeavoring to arrange to run motor-cars on the frozen waterways in both Chinese and Russian territory until the ice breaks.

HIGHWAYS

Highways Urged for Kwangtung.—The "Canton Times" is urging the Kwangtung Provincial Assembly to start a Good Roads campaign, and begin by building a motor road from Canton to connect with the one built in the New Territory opposite Hongkong by the British.

Road Round Hongkong Island.—The new motor road round Hongkong island has been completed. It constitutes one of the most picturesque routes for its length in the world.

New Motor Roadway in South China.—The required fund for the proposed *Maloo* (horse road) from Kongmoon to Sunwei city, directed by some wealthy merchants of Hongkong, is $240,000 which is divided into twelve shares, each of $20,000, all of which has been raised. It is understood that the automobile road is divided into three sections; the first section is from Eastern Gate to Tze Lai Chung Hau of Kongmoon; second section, from Kongmoon to Pak Kai; and third, from Pak Kai to Kongchow of Sunwei district. The work of the first section will be commenced shortly. The width of the road is thirty-six Chinese feet, and both sides of the road will be bounded by iron and wire netting. The "Canton Times" says that the road will be used for the running of automobiles only. Eight automobiles each to convey twenty persons will run every 25 minutes. The fare will be divided into three classes: first class, 20 cents; second class, 10 cents and third class, 5 cents.

Motor Truck Transport Road.—The Canton-Samshui Railway plans to spend some $200,000 to establish a motor truck transport road between Fatshan and Chanchuen, a distance of about ten miles. When the road is built motor cars and motor trucks for the conveyance of passengers and goods will be run regularly at fifteen minute schedules from either terminal.

Roads in Shensi.—The Civil Governor of Shensi Province is doing his best to build motor roads in the vicinity of Sianfu, and particularly between Tungkwan and Sian. He introduced one automobile sometime ago and, it is said, has purchased thirty more for general service.

Shansi Governor Making Roads.— The Governor of Shansi Province, who is noted for his progressiveness, is also improving the roads about Taiyuanfu and, it is said, has already ordered two American motor trucks as a try out.

WATERWORKS

Shanghai Waterworks.—According to Mr. A. P. Wood, of the Shanghai Waterworks, the supply of water in Shanghai dates back to 1881 and the undertaking was the first of its kind to be constructed in either China or Japan. In view of the universal adoption of water supply systems, it was astonishing to note how very few towns in China had followed suit.

The water is taken from the Whangpoo river at flood tide by gravitation and pumping, the latter being effected by steam and electrically operated pumps installed on the river banks. The water is discharged into six settling reservoirs having a total capacity of 42,000,000 gallons and in these the water remains until the sediment and heavy matter are precipitated. This accomplished, the water is pumped out through floating suction pipes so arranged that the top water is always drawn off, leaving the sediment at the bottom undisturbed. The water is next pumped to the service reservoirs which are raised some 10 or 12 feet so as to allow a steady flow of water by gravitation to the filter beds. Here, after passing through a layer of fine sand and other filtering material, the water again flows by gravitation to the clean water reservoirs which are entirely covered in so as to prevent any possibility of pollution from the atmosphere or other sources. From here the water is pumped into the mains and thence to the consumer. The average daily consumption of water in 1902 was 3,805,340 gallons, whereas during the past 10 months only of the year 1919 the average daily consumption had become 14,962,950 gallons. To meet the ever-increasing demand for water brought about by the rapid development of the Settlement and outlying districts, very big

extensions were now in hand, and when completed, would maintain a constant pressure during the daytime when the demand for water was naturally at its highest. The principal items provided for a new pumping-engine to be used as a standby in case of accident, a new 40-in. main from the pumping station to the Settlement, and the building of extensive reservoirs and pumping plant in the Western district.

Canton Waterworks.—Efforts are being made to enlarge the Canton Waterworks but constructing new storage and filtration reservoirs. At present there are only three storage reservoirs. A laboratory for the analysis of water is also recommended.

Kaifeng Project.—The authorities at Kaifeng, Honan, contemplate installing a waterworks. Rumors existed early in December that a loan had been made with Japanese interests for this purpose but that has been officially denied.

SHIPPING

M.B.K. American Line.—The shipping department of the Mitsui Bussan Kaisha has decided to carry out its plan of inaugurating a regular steamer service between Japan and America. The terminal ports will be Dairen and Seattle, the service to be maintained once a month. The steamer *Kenzan Maru* will be the first ship and will sail about the end of December.

Japan's Shipping.—At the end of October there were 710 ships of over 1,000 tons gross register, with 2,251,930 tons gross register, owned by Japanese companies. The N.Y.K. owns 95 of these steamers, with a total gross tonnage of 444,967 tons, and the O.S.K. 78 vessels of a total of 308,704 gross tons.

Shipping at Kobe.—The shipping returns of Kobe for November show a considerable increase in the arrivals of foreign ships, especially American steamers, which are now a close second to British vessels. The November arrivals consisted of 60 foreign ships, totalling 359,180 tons gross, and of 1,225 Japanese ships, with 1,279,570 tons. Compared with the corresponding month of last year, the foreign ships show an increase of no less than 42 in number and 286,351 tons in tonnage; the Japanese vessels show a decrease of 91 in number and an increase of 33,585 tons in tonnage.

Expatriation of Austro-German Prisoners.—The O.S.K. *Himalaya Maru*, the first ship to carry the Austro-German prisoners in Japan, was to sail from Kobe for Hamburg on December 26 with 1,000 men on board. It is said that the Osaka Shosen Kaisha will give them each an album of pictures showing places of interest in Japan. The second steamer is the *Kifuku Maru*, of the Kokusai Kisen Kaisha, which was to sail from Kobe on December 28, and the third the *Toyofuku Maru*, of the Kawasaki Kisen Kaisha, which was due to sail on December 30.

China Merchants Co. Buys Ships.—Orders for the purchase of five steamers have been placed by the China Merchants' Steam Navigation Company. One of these will be sea-going and has been ordered from a British ship works. Two of them have been contracted for with the New Dock, Pootung. They will ply between Shanghai and Hankow. The other two are being constructed by the Kiangnan Dock, and will navigate the Upper Yangtsze between Hankow and Ichang. The company has at present 25 ships running between coastal ports and along the Yangtze.

New Shipbuilding Record in Japan.—The fitting out of the *Bankok Maru*, 11,000 tons deadweight, built by the Uraga Dockyard, Japan, was completed on December 12, or in 14 days year, the foreign ships show an increase of no less after she was launched. It is said that this is a new record in Japan.

Shipping Strike Averted.—The China Coast Officers' Guild and the Marine Engineers' Guild combined during December to ask the owners of the smaller river and coastal trade steamers on the China coast for an increase of forty per cent. in the salaries of masters, first officers, and chief engineers. The China Navigation Company, Indo-China S. N. Co., China Merchants S. N. Co., Hongkong, Canton and Macao Stemboat Co., and the Douglas S. S. Co., are not affected by the demand, as they have consistently paid a considerably higher rate of wages than obtains in the smaller vessels, and have enhanced the salaries by the addition of bonuses, the granting of leave, etc. The owners of the vessels outside the companies mentioned refused the demands as being excessive, the scale submitted by the Guilds being as follows:

Gross Tonnage	Master	Chief Officer	Second Officer	Third Officer
Up to 250...	$400	$275	$230	$220
251 to 500...	425	280	230	220
501 to 700...	450	285	235	225
751 to 1,000...	500	295	240	230
1,001 to 1,500...	550	310	245	235
1,501 to 2,000...	600	325	250	240
over 2,000...	650	350	260	250

An allowance for food and ice of $40 per month for river steamers and $50 per month for other steamers where food is not provided. An adequate entertainment and transportation allowance to masters where necessary. The refusal of the owners to whom the demands were addressed caused the Guilds to call a strike as from December 17. In reply the owners pointed out that if the Guilds carried out its threat they would ask the protection of the Court and ask for an injunction against the Guilds, as any strike would entail the breaking of contracts and therefore be illegal. After considerable discussion it was announced that all the smaller companies involved had agreed to the decision of the men to have the matter submitted to arbitration.

SHIPBUILDING

Construction in Japan.—Nine ships, totalling 48,800 tons gross, were launched during October in Japan, according to the returns of the Department of Communications which cover ships of over 1,000 tons gross. The ships of over 1,000 tons gross, each launched between January and October, 1919, number 102, totalling 452,394 tons gross, wtih a decrease of 38 in number and an increase of 57,364 tons compared with the vessels launched in the corresponding period of 1918.

Launching at Hongkong.—The Hongkong and Whampoa Dock Co., Ltd., launched on December 16 from their Kowloon Docks the steel single screw steamer *War Sceptre*, of the "B" class, two deck standard type, built to the order of the Shipping Controller, London. The *War Sceptre* is the fourth vessel of the class to be launched by the Dock Co. Her sister ships, *War Sniper*, *War Bomber*, and *War Trooper* have proved satisfactory on speed trials, and when tested for deadweight, the latter being 8,245 tons and the average speed 11 knots per hour. The dimensions are 400-ft. B.P. by 52-ft. MLD. by 31-ft. MLD. Tween decks 9-ft. high. The gross tonnage is 5,100 tons and net tonnage 3,300 tons. The *War Sceptre* was christened by Mrs. S. H. Dodwell.

Shanghai Standard Ship Departs.—The s.s. *War Diadem* built to the order of the British Shipping Controller by the Shanghai Dock and Engineering Co., Ltd., and launched from their Pootung Yard on October 11, has left for Rotterdam under the name of *Panagis*. She flies the Greek flag. The Company have the *War Tiara* and *War Regalia* under construction, and the first of these will be launched very soon.

INDUSTRIAL

Bubble Companies.—The Japanese Government is reported to be alarmed at the remarkable multiplication of bubble companies, which increase in number daily, and to fear serious effects from such speculative recklessness, says the "Japan Chronicle." The authorities welcome the development of any branch of industry or commerce based on a solid foundation, but they are of opinion that the present actual state of affairs is far from answering these requirements, and fear an economic crisis as the ultimate result unless such a reckless mania can be checked.

The Hanyehping Company.—A message to the Asiatic News Agency from Wuchang states that Mr. Tanaka, chief of the Commercial Department of the Japanese Foreign Office, who arrived there some time ago for the purpose of investigating the conditions of the Hanyehping iron and coal corporation and the iron mines at Tayeh, hopes to increase the output of iron and steel to meet the increasing uses of the Japanese Government and iron foundries in Japan, so that in the long run Japan may become independent of the United States and Great Britain for the supply of iron and steel in the development of her modern industries.

Match Combine in Japan.—Negotiations which have been going on between the Diamond Match Company of America and several Japanese concerns recently came to a standstill. The American representative is reported to be going to America to consult his principals, and the impression in Japan is that an agreement will soon be come to. The American proposition is that the Japanese concerns should first be bought up for Y.20,000,000, and then increase the capital to Y.30,000,000 with an investment of Y.5,000,000 on the part of both the Japanese and American interests.

New Spinning Venture in Shanghai.—It is now reported that Japanese business men have already bought a tract of land for a new factory to be built at Shanghai. Among the promoters is found the name of Mr. Yamamoto Jotaro, a leading Osaka business man.

A New Brewery.—An interesting piece of news is reported from Hiroshima, Japan. An American brewery expert, named, apparently, Mr. Hart, has been employed by a party of Japanese promoters, engaged in the establishment of a large brewery in Hiroshima with a capital of Y.5,000,000. The promoters include Mr. Miyake Seihei of Kure and other leading brewers in Hiroshima prefecture.

Wuhu Cotton Mill.—The Yu Chung Cotton Yarn Mill at Wuhu has opened up to give instruction to the coming operators. The mill will give work to many men, women and children.

Spinning Mill for Chihli.—The Chihli Provincial Assembly has approved the expenditure of a sum of $1,000,000 deposited at the Chihli Provincial Bank over ten years ago as the proceeds of a provincial loan, for the erection of a spinning mill at Shihchiachuang instead of Tientsin.

Camphor in South China.—The gentry of Kwangtung and Fukien have wired to the Peking Government opposing the camphor monopoly as proposed by General Li Hao-chi, Military Governor of Fukien. The camphor industry is receiving great impetus especially in Kwangsi, which, under the patronage of General Lu Yung-ting, hopes to be able to export within a few years great quantities of the product. Just now, the General is reported as being much interested in the development of the camphor industry in Hohsien, where there are already planted more than 100,000 camphor trees. A company with a capital of $400,000, divided into 40,000 shares of $10 each, is said to be under organization. The new company will install a plant for the extraction and distillation of camphor. The same report has it that at present the capital of the new company has almost been fully subscribed, with $200,000 from a rich merchant in the South Seas. The machinery for the camphor plant is being ordered from abroad, and an early commencement in the operation of the new industry is promised.

Cotton Mills at Tientsin.—A number of cotton mills are at present under construction in Tientsin. The Heng Yuen Cotton Weaving Co. is putting up a mill with 200 looms and 10,000 spindles, to manufacture sheetings, drills, and heavy canvas. The Yuan Textile Co. is erecting an extension for 21,000 spindles to its existing plant with 25,000 spindles. The Wahsing Cotton Spinning Mill began operations with 25,000 spindles at the close of 1918, and other mills are negotiating for the installation of 54,000 spindles. All these mills will use electric power from their own plants. Cotton experts are visiting the Kao Yang region and making valuable suggestions for the improvement of the cotton industry, while the College of Agriculture and Forestry of the University of Nanking has arranged for a number of cotton experimental stations in the Yantgze Valley for the cultivation of American cotton, as the local fibre is short and is inferior in strength.

Canton Paper Factory.—The Min Yuen Paper Factory established at Impo district, Canton, promises to produce white newspaper to supply the demand of local newspapers. At present the factory turns out about 3,000 catties of high class wrapping paper. It is the oldest paper factory in Canton, having been established about 30 years ago. It employs more than one hundred men, and with the completion of a new building to house new machinery recently ordered, it will employ more laborers. The principal is Mr. Lee Yan-chuen, a well-known Hongkong and Canton merchant.

Spinning Mill at Changchow.—A spinning mill is being erected at Changchow on the bank of the canal outside the South Gate. The prospectus of the company, which is capitalized at $600,000 under the promotion of the local gentry, says that cotton has been produced at Changchow from time immemorial, the annual production reaching 200 piculs even in days when there were no spinning mills in China. The soil being admirably fit for the cultivation of cotton, the output is being increased from year to year. As Changchow produces cotton cloth and silk goods, the natives are not without knowledge of spinning, but so far having no spinning mill, they had to rely on old methods, purchasing yarn from Shanghai, Soochow and Wusi to the extent of 20,000 bales a year. The site embraces 43 *mow* of land which was bought from the Government at the price of $3,000. The machinery is to be supplied from England. The structure will be built of reinforced concrete, whereas the motive power will be supplied by turbine motors bought from Messrs. Jardine, Matheson & Co. The mill expects to turn out 25,000 bales of yarn a year.

Oil Mill for Tientsin.—An oil mill equipped with first-class, modern machinery for manufacturing, filtering and refining all kinds of vegetable oils has been established in a substantial new brick building near the Chin-Chung bridge, Hopei, Tientsin. The mill is expected to turn out six to ten tons of oil daily. The mill has been founded by eight promoters, mostly returned students and men of the new school. They are : S. C. Liao, P. Anyang, T. Y. Chien, T. Hsu, C. L. Pan, M. F. Wang, H. C. Miao, and P. Y. Ching.

New Spinning Mill for Shanghai.—The Board of Directors of the Godo Spinning Co., Osaka, have decided that the present capital should be increased from Y.12,500,000 to Y.18,750,000. It was also decided that a sister company with a capital of Y.15,000,000 should be established at Shanghai, which fact accounts for the comparatively small increase of the capital of the old company. Arrangements will be made, says the "Japan Chronicle," for the transfer to the new company of a part of the tract of land the present company holds in China and also about 40,000 spindles at the lowest possible prices, with a view to speeding up the materialisation of the scheme under contemplation. The company proposes to pay a dividend of 50 per cent. for the second half of the present fiscal year.

Industrial Boom in Japan.—According to investigations made by the Japanese Department of Agriculture and Commerce, the number of new companies which came into existence during November aggregated 764, showing an increase of 286 as compared with the previous month. The paid-up capital for the new companies amounted to Y.53,294,000, which in spite of an increase in the number of companies shows a decrease of Y.5,016,000 as compared with October. According to investigations made by the Bank of Japan, the promotion and extension of companies in November stood in value at Y.384,610,000 and Y.169,605,000 respectively, aggregating Y.554,215,000. Calculated from the beginning of 1919 to the end of November, the figures amount to Y.2,269,217,000 in promotion and Y.1,144,327,000 in extension, aggregating Y.3,413,544,000, which shows an increase of Y.1,064 000,000 as compared with the corresponding month of last year. According to investigations made by the Mitsui Bank, the companies liquidated in the month numbered 67 for joint-stock companies, 62 for limited partnerships and 151 for joint stock limited partnerships, aggregating 280 firms. The capital involved stood at Y.21,120,050, of which Y.13,632,900 had been paid up. As compared with the previous month the figures under review show an increase of 29 in number and of Y.14,577,800 in the nominal capital and of Y.9,723,590 in the paid-up capital. The "Japan Chronicle" explains that a number of these liquidations must be formal liquidations for the increase of other companies.

Boycott Prompts Chinese Glass Factory.—Several Chinese in Shanghai have decided in view of the abundant stock of Japanese glass available in the market while national goods were conspicuous by their absence to promote a small glass factory with a capital of $50,000, and to manufacture glass by manual labor instead of by machinery for the time being, $20 000 was subscribed by those present at the meeting.

Sugar Dividend.—The Dai Nippon Sugar Manufacturing Company of Tokyo, which is among the foremost Japanese sugar concerns, is paying a dividend of 25 to 30 per cent. for the second half of the fiscal year. It may be mentioned that the company paid a 22 per cent. dividend for the previous term.

New Industries at Chinghwa.—At Chinghwa—our largest business centre in Honan Province, China—three new concerns are being floated, one a flour mill. This should be a paying concern, as they will be able to revive the large trade which at one time existed between Honan and Shansi in flour. Hundreds of mules come down from the hills every day, laden with coal or iron, and most of these return empty, so would be glad to carry flour back as they used to do when it was ground by water power.

Another is an electric light company. With an abundant coal supply, and even water power, this company should flourish. The demand from wealthy merchants for good light will not be lacking.

The third is a spinning company. There always has been a large trade in native cloth between this district and Shansi, so the market is ready waiting for a better supply. Cotton is grown locally, labor is abundant and cheap, says a correspondent of the "North-China Daily News."

Hunanese Oppose Sale of Cotton Mill.—The dispute between the Military Governor, Gen. Chang, and the Hunan native gentry, headed by ex-Premier Hsiung Shih-ling, over the control of the cotton factory at Changsha, is still unsettled. On the one hand, the natives strongly oppose the sale or transfer of this cotton factory to the Japanese for one and half million dollars while on the other, the natives are unable to pay this sum to the provincial government, even half in cash. Gen. Chang insists upon having ready cash for the payment of the arrears of his officers and soldiers who have not been paid for fully three months.

Japanese Paper Combine.—The Fuji Paper Manufacturing, the Tokyo Pasteboard Manufacturing and the Yokkaichi Paper Manufacturing Companies intend to form a combine. It is now reported that two other firms, the Kiso Kogyo and the Chuwo Seishi Kaisha are going to join this combine after first combining with each other. The object of this forthcoming "quintuple alliance," which will be capitalised at Y.50,000,000, is, it is reported, to compete with such leading rivals as the Oji Paper Manufacturing Company (of the Mitsui Bussan Kaisha) and the Mitsubishi Paper Manufacturing Company (of the Mitsubishi firm). Such being the case, it is expected that Japanese paper circles will be divided into three parties, the Fuji, the Mitsui and the Mitsubishi, holding out very interesting developments in future. It may be noted that there are some large pulp factories in Saghalien, and the Japanese paper mills are getting their supplies from these concerns to an increasing extent.

Ewo Increase Capital.—The capital of the Ewo Cotton Spinning and Weaving Company, Ltd., of Shanghai, was increased at the annual meeting on December 22, from Shanghai Tls. 750,000 to Tls. 1,000,000 by the issue of 5,000 ordinary unissued shares of Tls. 50 each at a premium of Tls. 145 per share, making altogether Tls. 195 per share. The new shares were offered to the holders of old shares in the ratio of one new share to holders of three old shares, those not taken up to be disposed of upon such terms as the Consulting Committee may think fit. This increase means the addition of Tls. 250,000 to ordinary share capital, making that account Tls. 1,000,000, while Tls. 725,000 will be placed to share premium account. At the present time the reserves amount to Tls. 1,200,000, so that it will be brought to Tls. 1,925,000. The last increase of capital was in 1909 when preference shares to the extent of Tls. 400,000 were issued. At that time land, buildings and machinery stood at Tls. 807,489.77 since which time the company had expended Tls. 1,444,545.59. The Company is putting up a new weaving shed with 88 looms.

Ewo has Prosperous Year.—At their annual meeting on December 4 the Ewo Cotton Spinning and Weaving Company, Ltd., of Shanghai, declared a dividend of Tls. 65 per ordinary share (Tls. 65 at rate of exchange on day of meeting equalled $93.15 American currency, and £25 9s. 2d. sterling). Tls. 100,000 was set aside for depreciation on plant and machinery and Tls. 50,000 on buildings Tls. 80.000 was set aside for repairs and renewals to plant. Tls. 100.000 was placed to cotton fluctuation fund, which fund now stands at Tls. 200.000. Tls. 60.000 was distributed as a bonus to staff at the mills.

Cotton Dividend.—The Kung Yih Cotton Spinning Co., Ltd., Shanghai, declared a dividend of Tls. 5 per share. The balance at credit of profit and loss was Tls. 706,463.

Company Dividends.—The following Japanese Companies have declared dividends : Dai Nippon Spinning Company, 60 per cent. per annum; Hinode Spinning Co., ordinary, 10 per cent.; special 25 per cent.; Toyo Paper Manufacturing Co., 40 per cent.; Harima Hydro-electric Co., 14 per cent.; Osaka Hosiery Weaving Co., 60 per cent.; Kwansai Shintaku (Trust) Kaisha, 10 per cent.; Tokyo Stock Exchange 29.2 per cent.; Nagoya Gas Co., 7 per cent.; Osaka Mousseline Weaving Co., 12 per cent., special dividend 23 per cent.; Godo Spinning Co., 50 per cent.; Fukushima Spinning Co., 80 per cent.; Osaka Bleaching Powder Manufacturing Co., 10 per cent.; Kinugawa Hydro-electric Co., 8 per cent.

Cotton-Growing Interest.—The Governor of Shansi Province is interesting himself in the growing of cotton and has already taken steps to encourage the erection of cotton mills in the Province.

COMMERCE

The Japanese Boycott.—The boycott of Japanese goods continues and agitations are taking place in various places in China. The Peking Government is endeavoring to prohibit the movement, and in this connection the Ministry of Education has sent out an order prohibiting students from publishing any pamphlets on diplomatic questions. Police and students came into serious conflict at Canton. In several places in the country bonfires were made of Japanese goods.

HARBORS, DOCKYARDS, ETC.

New Dockyard in Japan.—The Mitsui Bussan Kaisha's new dockyard at Hibiya-cho has been completed and covers a tract of land of some 358,000 *tsubo*. The yard is equipped with three docks (one a dry dock) and five slips, as well as many fine buildings, including a hospital, official residences, for employees, a seaman's training school, supplementary schools, etc. It is stated that the maximum capacity of the docks is for a ship 450 feet long.

Improvements for Nagasaki Harbor.—The Japanese Home Department has decided to include Y.7,000,000 in the budget for the next financial year to improve the harbors of Nagasaki and Nagoya. A proposal to undertake harbor improvement works at Nagoya has also been receiving attention from the Home Department, which has now made a favorable decision. Work will commence on these improvements at the beginning of next fiscal year.

Macao Improvements.—The reclamation of the Chinchow shores near Macao, South China, is approaching completion. Barracks and fortifications which are in course of construction in that part of the colony will be completed by next year, when the authorities propose to open the place as a new port.

AVIATION

Korea to Japan.—The Japanese military authorities are making arrangements for a non-stop flight between Hiroshima and Seoul, a distance of 720 kilometers. Some seven or eight aeroplanes will participate in the aerial journey, all to be first transported to Seoul, from whence flights will be made to different points of Korea. Finally the main flight will be made from Seoul to Hiroshima, across the Korean Channel and over the Sanyo railway. The journey is expected to take five or six hours.

Aeroplane Industry in Japan.—It is reported that the Mitsubishi Company has purchased the interests of the Japan Aeroplane Works at Ota-cho, Gumma prefecture, which has been under the management of Mr. Kawanishi, of Kobe, and other capitalists. Mr. Kawanishi and other business men are said to be contemplating building another aeroplane works at Oi, a town near Tokyo.

Air Service.—In connection with the suggested air service from England to Australia it is proposed to have stages between Cairo and Calcutta, Calcutta and Singapore, and Singapore and Port Darwin.

The Aerial Derby.—Commodore Beaumont and Major Glidden, Governors of the Aero Club of America and Vice-Presidents of the Aerial League of America, and also Mr. Benjamin Hillmann, all of whom belong to the Federation Aeronautique Internationale, and who have been commissioned to organize the first Aerial Derby round the world are at present in the Far East in connection with their work.

Aeroplanes as Pirate Hunters.—Captain Arthur F. Lym, commander of the Canton Aviation Corps, and an American educated man, advocates that aeroplanes be employed to patrol commercial routes and suppress piracy and brigandage. He recommends that aviation headquarters be established at Canton, Shuihing and Wuchow, on the West River, at Pakhongchow, on the North River, and Kongmoon and Waichow. In Captain Lym's opinion each station should maintain three aeroplanes of the scouting type capable of carrying two men, and be equipped with wireless, etc. He urges the Canton Government to buy aeroplanes and use them.

ELECTRICAL ENTERPRISES

Kobe Electric Charges.—The Electric Bureau of the Kobe Municipality now declares that an approximate deficiency of Y.1,500,000 is unavoidable in the next year's budget unless there is some increase in its income. To effect this increase the Bureau has under contemplation an increase in the lighting charges by 20 per cent., by which some Y.600,000 per annum would be obtainable.

Hongkong Company Profits.—The China Light and Power Company (Hongkong) for the fourteen months ended September 30 earned a gross profit of Hongkong $186,059.75. A dividend of eight per cent. was declared.

Shanghai's Telephone and Electrical Services.—At the opening meeting of the 1919-1920 session of the Engineering Society of China at the end of November, Mr. A. P. Wood, the President, said that in the near future there would be 13,000 lines and 9,000 telephones working in Shanghai. Well over 100,000 telephonic conversations took place in Shanghai daily, of which ten per cent. were connected within one hour in the forenoon. Speaking of the Shanghai Municipality Electricity Department he said that with the completion of the extensions at the Riverside station the Department would be in a position to handle a load of 77,660 kilowatts or say 100,000 horse power. The estimated load for the coming year was 34,000 kilowatts and an output of 130,000 units was anticipated. The turbo-generators now being installed were of 20,000 kilowatts capacity each, and individual transformers of similar capacity were included in the layout.

Kongmoon Light Co Expanding.—The Electric Light Supply Company of Kongmoon, South China, has increased its capital by $200,000 for the purpose of purchasing more machinery and installing more electric wires. The whole additional capital has been raised and a petition has been sent to the Canton authorities for registration.

New Japanese Power Company.—Among the new companies formed in Japan in November was the Dai Nippon Denryoku Kaisha for developing electrical power. The capital is Yen 50,000,000.

Electric Railway Company Profits.—The Nagoya Electric Railway Company is reported to have amassed a profit of Y.1,408,000 during the second half of the present fiscal year, showing an increase of about Y.20,000 as compared with the previous period. Out of this revenue Y.750,000 will be allotted to the payment of a call on shares, after which it is anticipated that the company will pay a dividend of 11 per cent.—the same as for the previous term—for the second half of the current fiscal year.

Company to Operate in China.—The Kawakita Electric Enterprise Company, which is one of the first-class companies in Japan, so far as the electric industry is concerned, is now planning for the establishment of a sort of a sister company in China with the support of leading business men. The company will explore the southern part of China, with permission of the Chinese authorities, of course. It is named the Toyo Denki Kabushiki Kaisha and has a capital of Y.5,000,000 allotted. It is expected that if things go without any hitch the company will be established in the course of the present year.

More Wireless for China.—It is reported that among seven valuable patents which the Japanese have purchased from Germany is the "Telefunken" patent, and that the Japanese are endeavoring to arrange for the erection of a powerful Telefunken station in China by March next.

A Pakhoi Plant.—Some years ago Dr. Neville Bradley of the Church Missionary Society, when resident installed a small electric light plant in the hospital compound. Later on a more powerful plant was purchased, and set up in the town itself. Dr. Bradley, on his transfer to Yunnan, decided to sell the plant, and the transaction has now taken place, two-thirds of the purchase price having been paid. The new company evidently anticipated large profits for they have already increased their working expenses by some 150 per cent. Whether the supply of light will improve correspondingly is a question, says the Pakhoi correspondent of the "North-China Daily News."

Hanshin Electric Tram Co.—The Hanshin Electric Tramway Co. has decided to increase the capital from Y.10,500,000 to Y.25,000,000, for which purpose 290,000 new shares will be issued.

Electrical Power for Tin Mining in Malaya.—With the object of arousing greater interest in the problem of the application of electrical power to tin mining Messrs. D. M. Hutchinson and W. J. Wayte submitted a joint paper before the institution of Electrical Engineers on "Electricity in tin mining in the Malay States." The paper pointed out that European-owned mines employed a maximum of machinery and a minimum of labor, while Chinese-owned mines employed a maximum of labor and a minimum of machinery. The mines under Chinese management in 1918 produced about 70 per cent. of the total output and as there were under half-a-dozen electrically-driven Chinese mining plants, there should be a great scope for the electrical engineer in the immediate future.

Record Wireless Station at Saigon.—What is probably the most powerful wireless telegraph station in the world will soon be in operation at Saigon, Indo-China. It will be able to communicate successfully with France, Africa, Madagascar Island, French New Caledonia, Australia, Japan and the United States. The continuous wave system will be used. Electrical power will be supplied by two convertor groups equipped with internal combustion motors of 2,500 horsepower. Aerials will be suspended from a height of 833 feet and the net work of wires will spread over nearly 180 acres. The new station is expected to be a great aid to the Pacific north-west in carrying on business across the Pacific, in view of present communication difficulties.

MINING

Lungyen Iron Exempted from Taxation.—The Peking Government has decided to exempt the iron and steel products of the Lungyen Iron Mines (on the Peking-Suiyuan railway) from duties and taxes within a radius of 50 miles of the Maritime and native Customs. Iron ore, however, is to be taxed.

Iron in Kwangtung.—Large iron deposits are reported to have been discovered in Ma Chingyun district. The Director of the Canton Governments Smokeless Powder Factory, who is interested on behalf of the government in the new discovery has despatched to that place a number of mining engineers to report on the real value of the find.

Tungsten from China.—It is believed that the growth of China as a predominant figure in the tungsten market of the world is based on sound economic laws of abundant and cheap supply, says a report of the Bureau of Commerce at Washington, and that it should be to the greatest advantage of American manufacturers whose products are affected by the price of high-speed steel to continue to draw from the Chinese market. This will not only give their products a lower price in world competition, but will encourage export trade with China by furnishing return cargo.

Lungyen Iron Mines.—It is reported that General Tinge Shih-yuan, Managing Director of the Peking-Suiyuan and Peking-Hankow Railways, has been appointed Co-Director of the Lungyen iron mines, near Kalgan, in Chihli Province. The same report says that half the capital of $10.000,000 has been subscribed by Japanese capitalists and Japanese mining engineers are in charge of mining operations.

Coal in Korea.—The coalfield in question extends over a vast tract of land in Kaichon, Sunchon, Tokchon, and Mainsan Districts in South Pyongando, and Samchok District in Kangwando. The working of the field has so far been reserved to the Pyongyang Mining Station. Owing to the rise of the fuel question in Korea, however, it has now been found advisable to try to obtain cancellation of the reservation and the mining men have openly started a movement to induce the authorities to permit public operation of the field. It seems an extraordinary procedure, if the deposit really is a rich one, as alleged, for the Government to keep it "up its sleeve," says the "Japan Chronicle."

Iron and Coal in Japan.—The October yield of iron in Japan reached 7,291 metric tons, which is an increase of 6.5 per cent. as compared with the corresponding period of 1918. Coal increased 9 per cent. over the record for October, 1918, the total yield of the month being up to 2,242,047 metric tons.

Shuikoushan Tin and Antimony Mines.—A report from Changsha says that "the famous Shuikoushan tin and antimony mines are working quite smoothly. Some mining experts are expected there from Japan to act in various capacities in this valuable mine in accordance with the agreement signed by the former Military Governor Gen. Tan Yen-kai with the Japanese Mitsui Company of Shanghai for a loan of five million dollars out of which only one million dollars were paid over to the Chinese. The natives of Hunan strongly oppose Japanese control, but only future events can show whether the smart Japanese will actually take charge of this mine or merely work behind the scene. The Chinese authorities say that the German loan of two million dollars for this mine has been confiscated by the Peking government as a result of the war."

Kai'an Mining Output.—The total output of the Kailan Mining Administration for the period beginning November 16 and ended December 13 was 370.606 tons, while the sales during the same period totalled 358.937 tons.

CONSTRUCTION

Shanghai Race Club Building.—Qualified architects are invited by the Shanghai Race Club to submit designs for grand stand and club house, public stand and pari rooms, refreshment rooms and conveniences for the public, on a site in the Race Club enclosure. Particulars and conditions of the competition may be obtained from Mr. A. W. Olsen, secretary of the club.

Rebuilding Osaka.—The Osaka Municipality has just drawn up a gigantic plan of rebuilding the city so as to meet the modern requirements in all respects, says the "Japan Chronicle." As the plan is on a gigantic scale the work is divided into many stages, each of which will cover ten years. The sum of Y.100,000,000 is estimated as the expenditure requisite for the first stage of the work. Mr. Ikegami, the Mayor, Dr. Seki, the Assistant Mayor, are interested. The city of Osaka, rebuilt on the new plan, will cover 85 square miles, extending to Takarazuka in the north, to the foot of Ikomayama in the east, and to the Minami Yamatogawa in the south. Roads are classified into five, the first-class road having a width of 24 *ken* (one *ken* being six feet), second-class 16 *ken*, and third-class 13 *ken*. The fifth-class, or the narrowest road, will be eight *ken* in width.

Parliament Buildings, Peking.—It is reported that the present Chinese Premier has decided to resume construction of the Parliament House buildings at Peking which were under way when the Revolution of 1911 took place. Construction work was stopped when the Manchus were overthrown.

Buildings at Canton.—Work on the new building for H.B.M. Consulate in Shameen, Canton, has been started. When completed the building will be an imposing addition to the concession's modern buildings. The work on the Banque Industrielle de China new and permanent quarters in the French concession Shameen, is also in rapid course of completion.

CONSERVANCY

Grand Canal Work.—Mr. John R. Freeman, Consulting Engineer of the American International Corporation, is on an inspection trip of the Yellow River in company with Mr. Yang Pao-ling and Mr. van der Veen, members of the Chihli River Commission. The main object of the journey is to study the problem in connection with the crossing of the Grand Canal over the Yellow River.

Canton Harbor Works.—The members of the Canton Provincial Assembly have addressed a letter to the Civil Governor of Kwangtung Province requesting him to call the attention of the directors of the River Conservancy Board to the approach of the flood season, and beg that body to take the necessary steps to prevent in time the loss of many lives and of property and crops. The Civil Governor immediately referred the communication to the directors of the Conservancy Board, with the recommendation that prompt action be taken. It is said that the Board would be willing enough to start actual operation, if sufficient funds are provided.

New Water Way.—A band of Chinese surveyors are busy taking levels and measurements of the country in the vicinity of the Tsin River, Honan Province, with a view to connecting this river with the Wei River at Taokow, and thence on to Tientsin. If they are successful this may be the means of delivering Hsiuhsien and Wuchihhsien from the floods which are so frequent, and which do so much damage to the Taoching Railway, but on the other hand, unless the projected canal is kept well dredged, it will prove an additional danger to Sinsiangsien and Chisien which suffer more or less from flood every year.—"North-China Daily News" correspondent.

The Kaifeng Canal.—Work is being carried on in connection with canal extension from the south-east (Kueiteh) to Kaifeng. Work has started on this end likewise, and is being conducted by gangs of countrymen who have been pressed into service, and whose term of labor is generally for one month. These unfortunates receive neither food nor money for their work.

FINANCIAL

Canton Mint.—Director Kun Ching, of the Government Mint, Canton, has ordered the collection of all old Kwangtung ten and twenty-cent pieces for the purpose of recoining them. The mint has been turning out 750,000 pieces of twenty and ten-cent coins daily, and working day and night. The "Canton Times" claims that this mint is unique for the fact that it has turned out more individual coins than any other mint in the world, most of the coins being one-cent copper pieces.

Chinese Hoard Silver.—Silver is being withdrawn from circulation and hoarded, says the Nanning correspondent of the "North-China Daily News." Almost everyone has his pile, from the official down to the coolie—waiting for the rainy day. This mineral wealth is of no use to anybody at present, and its withdrawal from circulation is another factor in making the price of that metal rise. The White Miao in the northwest of the Province and on the borders of Kueichow, who grow the opium and sell it, will take payment only in silver. But this silver is of no use to them or anybody else. They wax rich, but they buy nothing. They still live as their forefathers did, and the precious metal is buried and untouched.

What is here said of Kwangsi is true of every province in China.

Japan's Revenue.—The total revenue of Japan to the end of November was Y.955,093,082.616, according to a report published by the Finance Department of Japan, which is an increase of Y.181,888,464.765 over the corresponding period of 1918.

New Stock Exchange in Dairen.—A message from Dairen, Manchuria, reports the activities of a party of enterprising business men, including some Osaka people, in establishing an exchange to deal with stocks, shares and natural products in Dairen. The capital is fixed at Y.10,000,000,, which is divided into 200,000 shares.

Japanese Budget.—The Budget for 1920-1921 was informally shown to members of the Diet on December 20. Revenue, ordinary, is estimated at Yen 1,043,208,700 and revenue extraordinary at Yen 232,740,323; Expenditure, ordinary Yen 752,177,906, expenditure, extraordinary, Yen 523,766,117 showing increase over the preceding year in revenue, ordinary, of Yen 204,032,757; in revenue extraordinary, of Yen 7,690,926; in expenditure ordinary of Yen 246,279,514 and in expenditure extraordinary of Yen 137,474,169. The revenue increases are principally due to increases in the income and liquor taxes. The expenditure increase are due to appropriations for the army, navy, and communications departments. The army took Yen 241,726,868 as compared with Yen 144,735,560 in the preceding year, the Navy Yen 377,770,376 as compared with Yen 249,548,192; and communications Yen 218,310,915 as compared with Yen 139,821,706. The Minister of Finance in an explanatory speech said that in compiling the budget special consideration had been given to the consummation of national defence, improvement of means of communication and encouragement of education and industries.

Vickers' Loan Protest.—A forml protest has been lodged by the American Legation at Peking with the Chinese Minister for Foreign Affairs against the Vickers Aeroplane Loan Agreement.

Sino-Italian Bank.—A Japanese newspaper printed in the Chinese language states that the contract for the Sino-Italian Bank calls for $4,000,000 of Chinese capital and Lire 20,000,000 of Italian. The bank is to operate under the agreement for 30 years, with the right of shareholders to extend the period. The new concern will handle ordinary banking business. The Governor is to be Chinese and Chinese are to occupy two posts as directors and one supervisor, the Italians to have similar officers, as well as three advisers.

Revenue to Chinese Government.—The sum of Tls. 3,400,000 was due for release from the surplus revenue of the Chinese Maritime Customs to the Chinese Government on December 25. The Diplomatic Body at Peking stipulated that Tls. 465,000 should be delivered to the Southern Government at Canton, and Tls. 400,000 should be utilized to defray the expenditure of the Chinese Legations in foreign countries.

China's Budget.—The Eighth Year Budget of the Republic of China includes:

Permanent Annual Income	$409,838,001
Temporary Annual Income	80,581,785
Total Annual Income	$490,419,786
Current Annual Expenditures ...	$271,289,295
Temporary Annual Expenditures ...	224,473,681
Total Annual Expenditures	$495,762,976

Of the revenues those from the Salt Gabelle stand first with $108,815,000, the income from customs being second with $93,268,907, and the proceeds of the land tax, China's greatest potential asset, coming third with $86,345,388.

Over two-fifths of the estimated expenses for the Eighth Year of the Republic (1919) are for the army, the outlay for which is fixed at approximately $198,000,000. As against this estimate for military upkeep the budget provides that $6,500,000 shall be spent for education, about $6,000,000 for the Ministry of Foreign Affairs, $10,350,000 for the Ministry of Justice, and $3,400,000 for indus trial developments under the Ministry of Agriculture and Commerce.

Another China Loan.—A Peking report states that the Quadruple Banking Syndicate are negotiating to lend China £5,000,000, and that it is probable that the loan will be arranged and money made available at latest early in January.

Move for Currency Reform.—The British Minister at Peking has, in pursuance of the resolution of the British Chamber of Commerce Conference, addressed a Note to the Peking Government urging the introduction of a uniform dollar currency, the abolition of sycee, and the establishment of a mint for the free coinage of dollars at Shanghai. The Chinese Government is said to be ready to establish a mint at Shanghai and will announce its decision early in January.

MISCELLANEOUS

Siberia's New Cabinet.—The constitution of the new Siberian Cabinet is as follows:—Premier and Minister of the Interior, M. Pepelaieff; Vice-Premier and Minister for Foreign Affairs, M. Treteakoff; Finance, M. Burishkin; Commerce, M. Okobokoff; Agriculture, M. Petroff; Labor, M. Shumilovsky; Communications, M. Ustrikoff; War, M. Khangin; Public Instruction, M. Preobragensky; Justice, *ad interim*, M. Morozoff; State Controller, M. Erasnoff; Superintendent of Government Affairs, M. Gins. The actual direction of the Ministry of the Interior is entrusted to M. Cherven-Vodaly, Acting Minister. The Ministries of the Navy and Supplies are to be reduced to the status of departments.

Pasture Project in Mongolia.—Baron Okura is undertaking with General Chang, the Chinese Military Governor at Mukden, a pasture project in Mongolia. The pasture covers an area of 40,000 *cho* (about 12 miles square), in which the sum of Y.4,000,000 will be invested.

Chinese Labor.—A Washington despatch announces that the Labor Conference has fixed the hours for China as follow: Adult labor: 10 hours per diem, with a maximum of 60 hours per week. Those under 15 years of age will have an eight-hour day and a 48-hour week. A holiday will be granted every seven days. The Factory Law will be applicable to all establishments employing more than 100 hands. The law will be enforced in factories in foreign concessions or leased territory and will come into force immediately. The message states that China's representative protested against the decision but was over-ruled when the question was put to the vote.

Returned Laborers to form Organization.—Chinese laborers returned from war service in Europe will form a society in Shanghai for promoting labor interests in China, according to an announcement by the President of the Belgian Chinese Labor Union, Mr. Shah Chi-fung. When the workmen were in France and Belgium, two unions were organized respectively in Rouen and Poperingh, to which all the 145,000 Chinese laborers in Europe belonged. These unions undertook to care for the educational development of the Chinese. As most of the laborers have now returned to China, the executive officers of the two unions feel that an organization in China is necessary.

Camphor in Formosa.—The Government General of Formosa has made a careful investigation into the matter of increasing the production of camphor and its endeavors have been quite successful. It was recently announced to the celluloid manu facturers that the camphor supply would increase by about 4,000,000 pounds, beginning the next fiscal year, and celluloid manufacturers will not find themselves handicapped again by a camphor shortage.

China's Customs Record for 1919.—The Chinese Maritime Customs revenue for 1919 amounted to Haikuan Tls. 46,000,000, equivalent to over £14,500,000, the highest collection on record, surpassing that of 1913 to which opium largely contributed by Tls. 2,030,000 or nearly £800,000 if calculated in gold. The revenue also shows an increase of Tls. 9,655,000 as compared with 1918. The revenues collected at the principal ports were approximately as follows:—Antung, Tls. 1,345,200; Dairen, Tls. 4,556,900; Tientsin and Chinwangtao, Tls. 5,565,800; Kiaochow, Tls. 1,666,700; Hankow, Tls. 4,219,500; Shanghai, Tls. 14,289,700, an increase of Tls. 3,386,600; and Canton, Tls. 2,471,900. The revenue of the Native Customs under the Inspector General's control amounted in round numbers to Tls. 4,491,000, also a record and an increase of Tls. 517,000 as compared with 1918. After meeting all the foreign loans indemnity obligations secured on the Native Customs, including the Reorganization Loan for 1919, and providing for the cost of collection and sundry fixed appropriations for river conservancy, harbor works, etc., it has been possible to hand over to the Government during the year Tls. 22,604,123. Out of the amount released the Government appropriated and handed to the Inspector General Tls. 4,795,000 for the service of domestic loans. The foreign loan indemnity service dependent on the Customs revenue requires an annual disbursement of £7,000,000. At the present rate of exchange the revenues controlled by the Inspector General produce about £20,000,000 annually. It will thus be seen that if silver maintains its price, there will be a considerable margin of unpledged revenue at the disposal of the Government.

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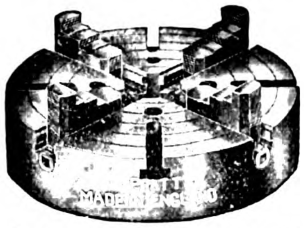

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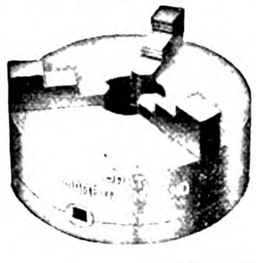

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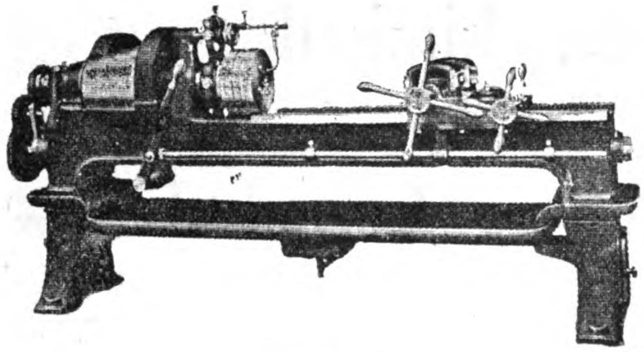

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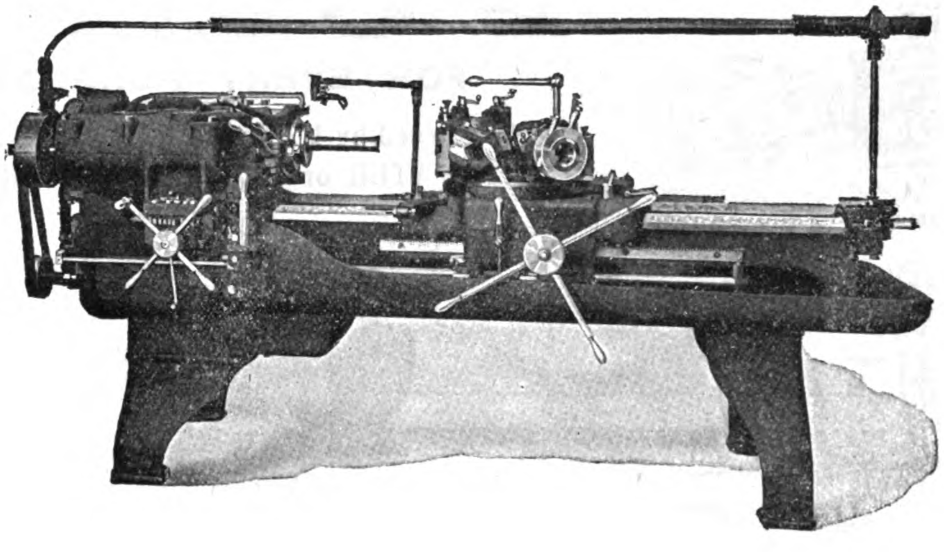

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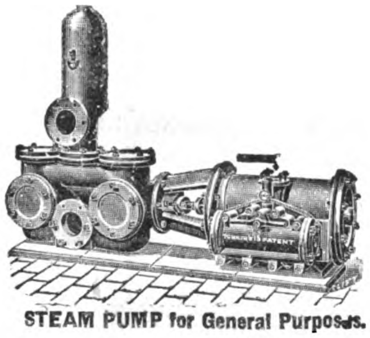

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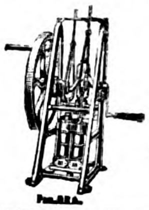

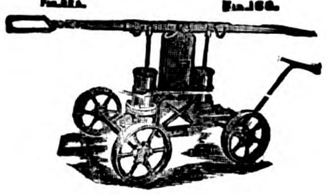

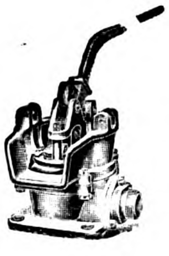

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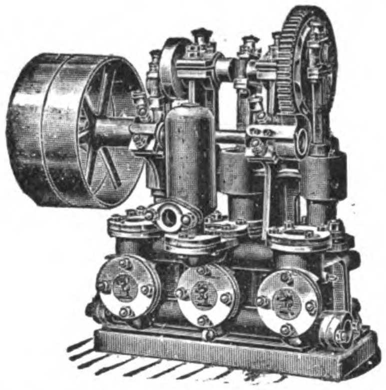

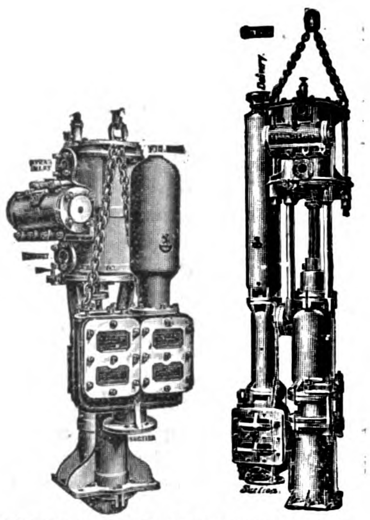

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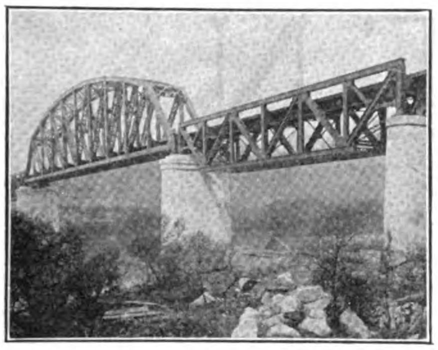

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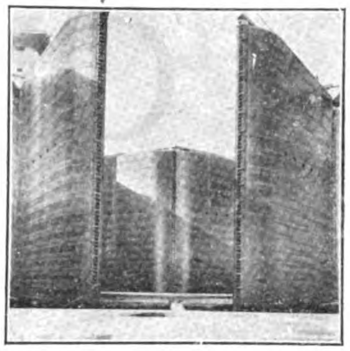

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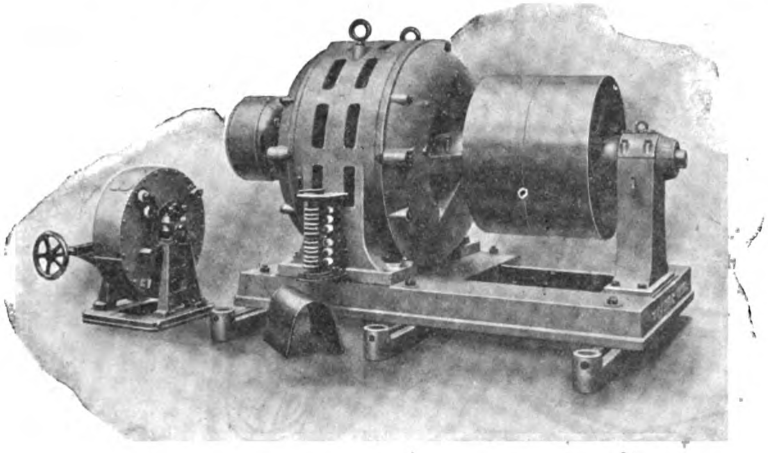

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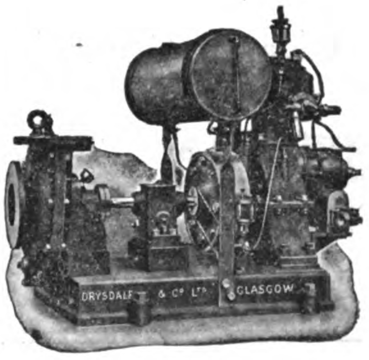

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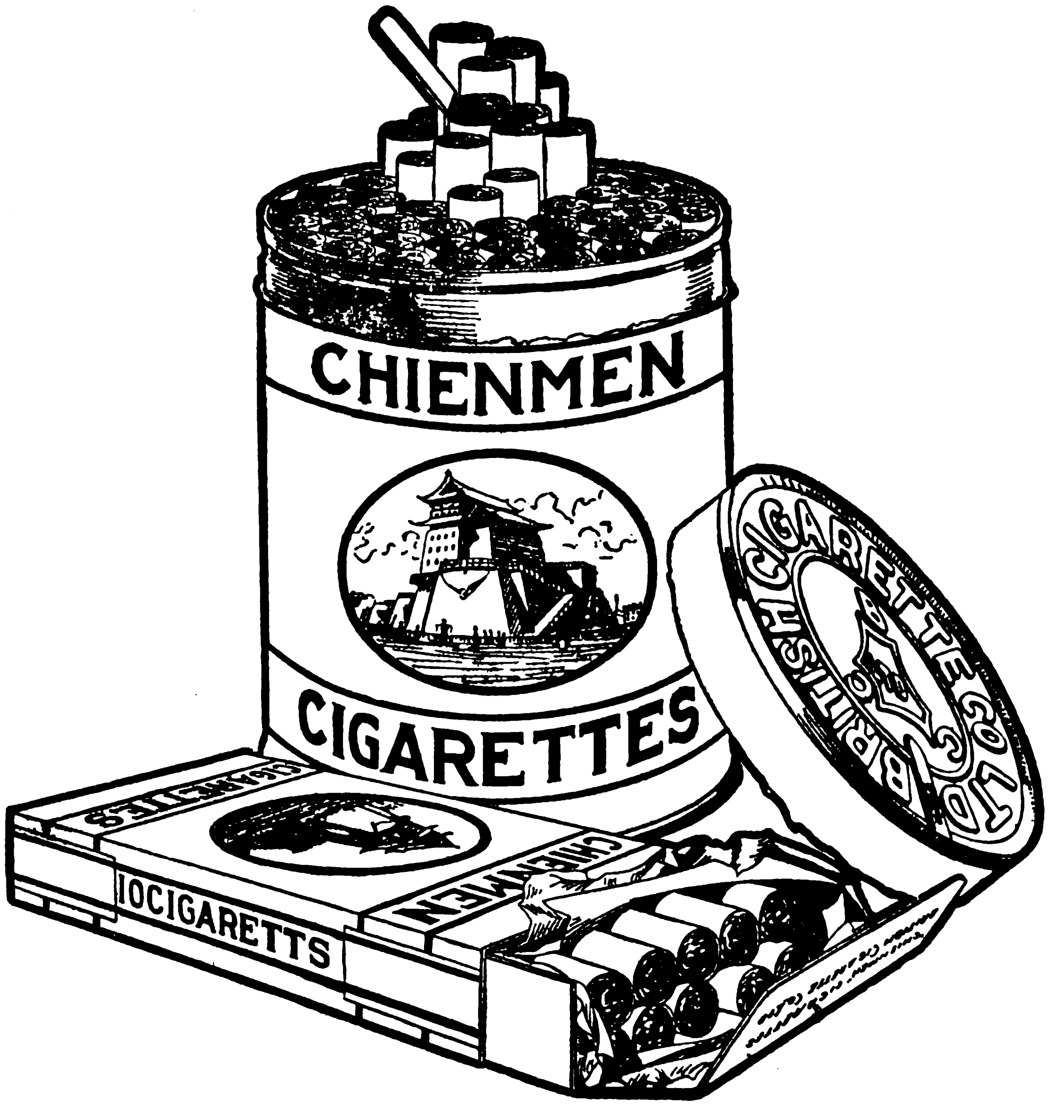

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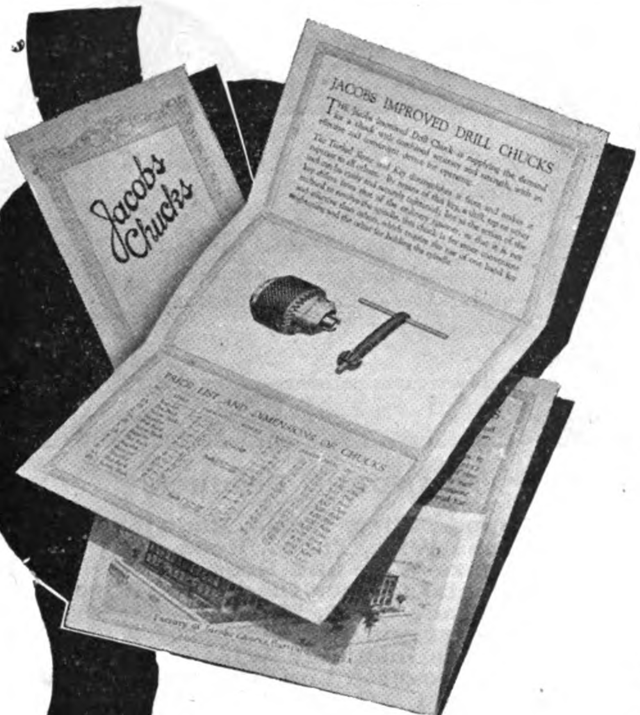

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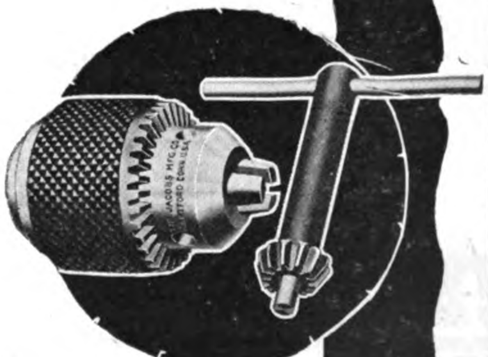

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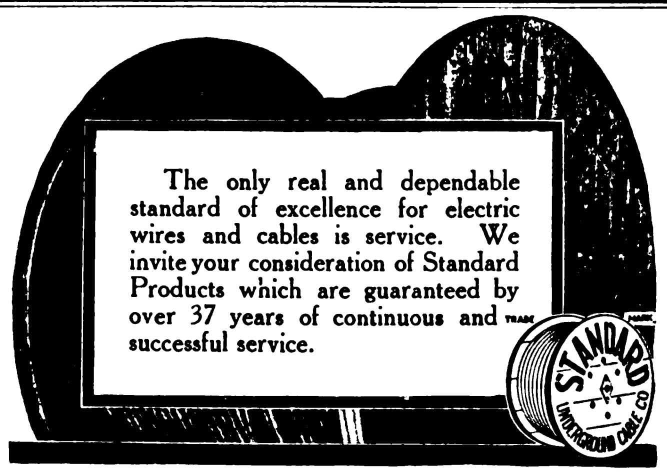

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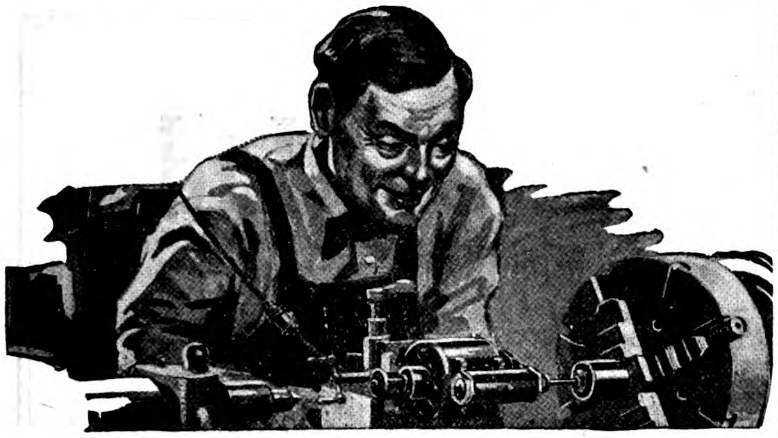

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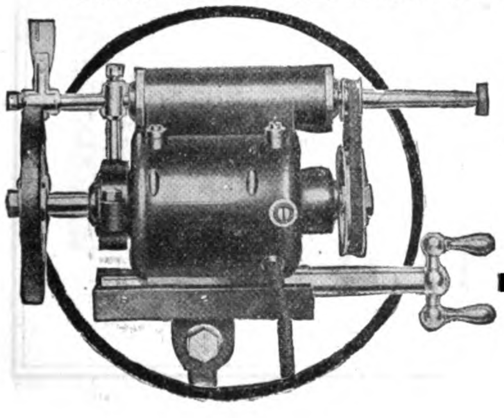

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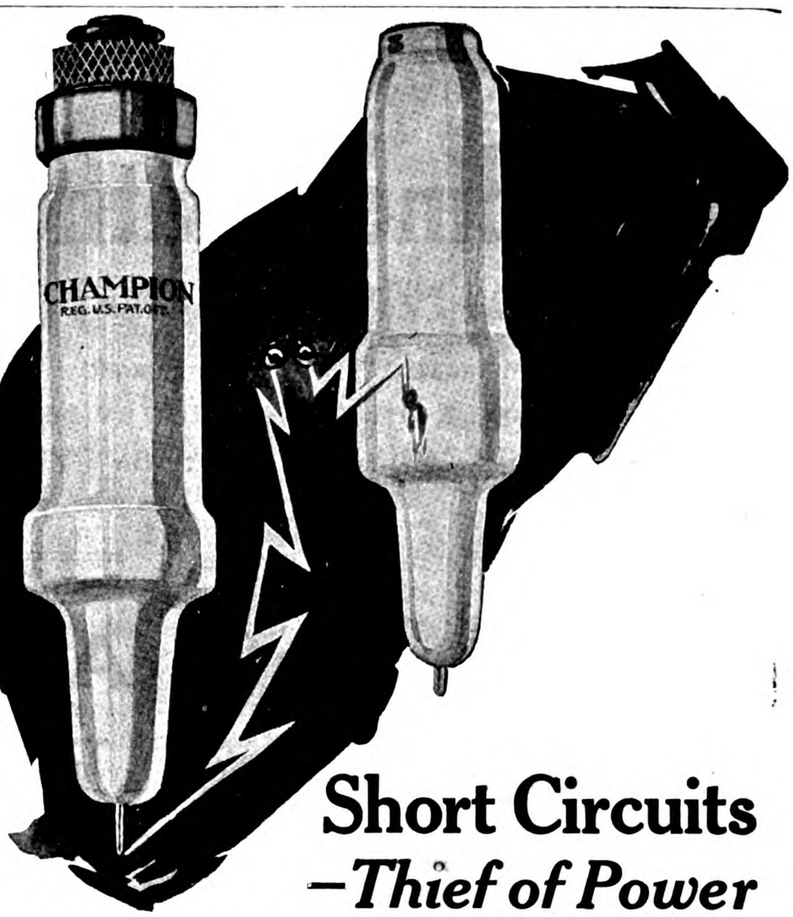

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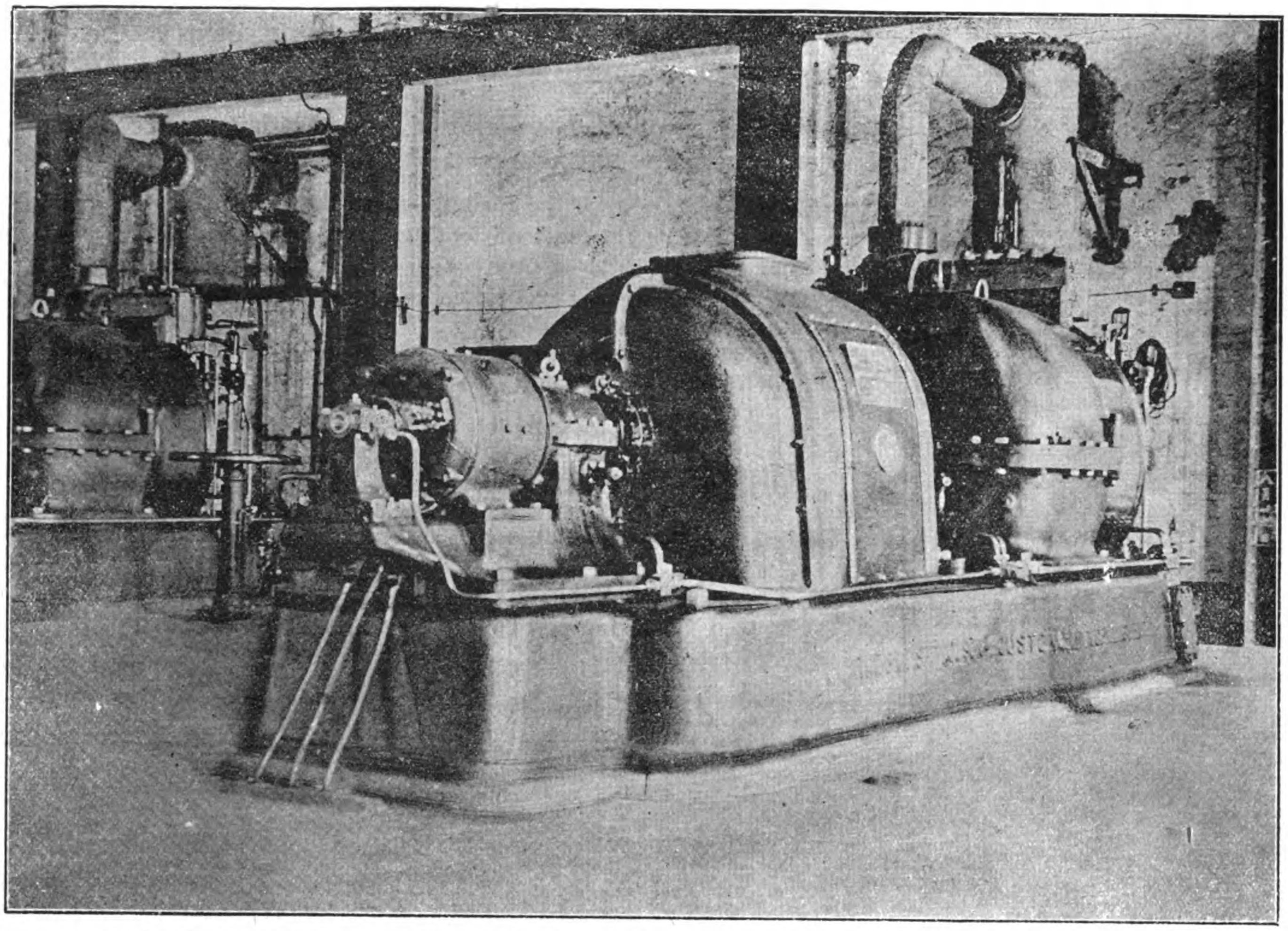

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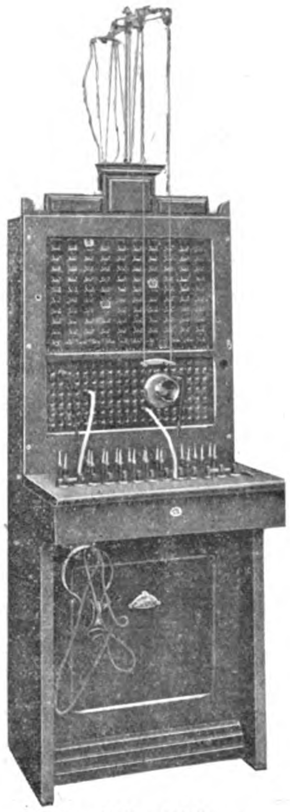

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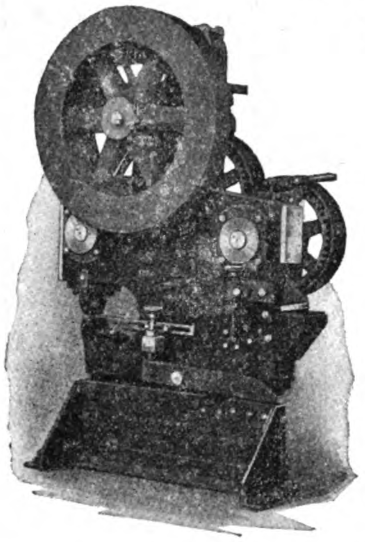

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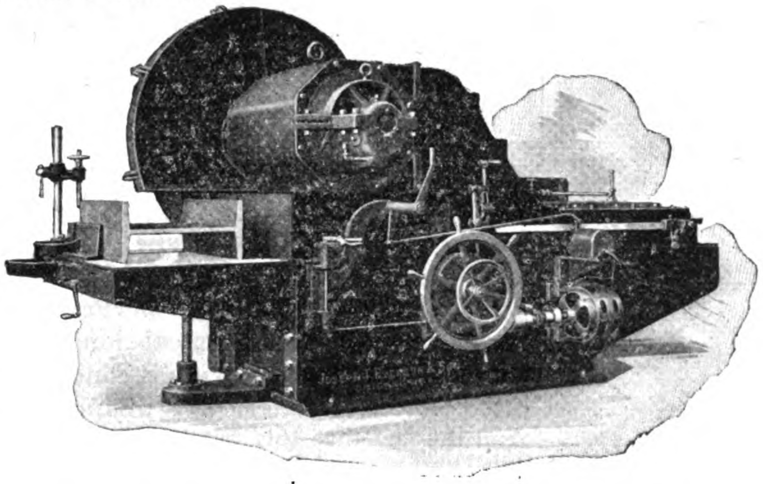

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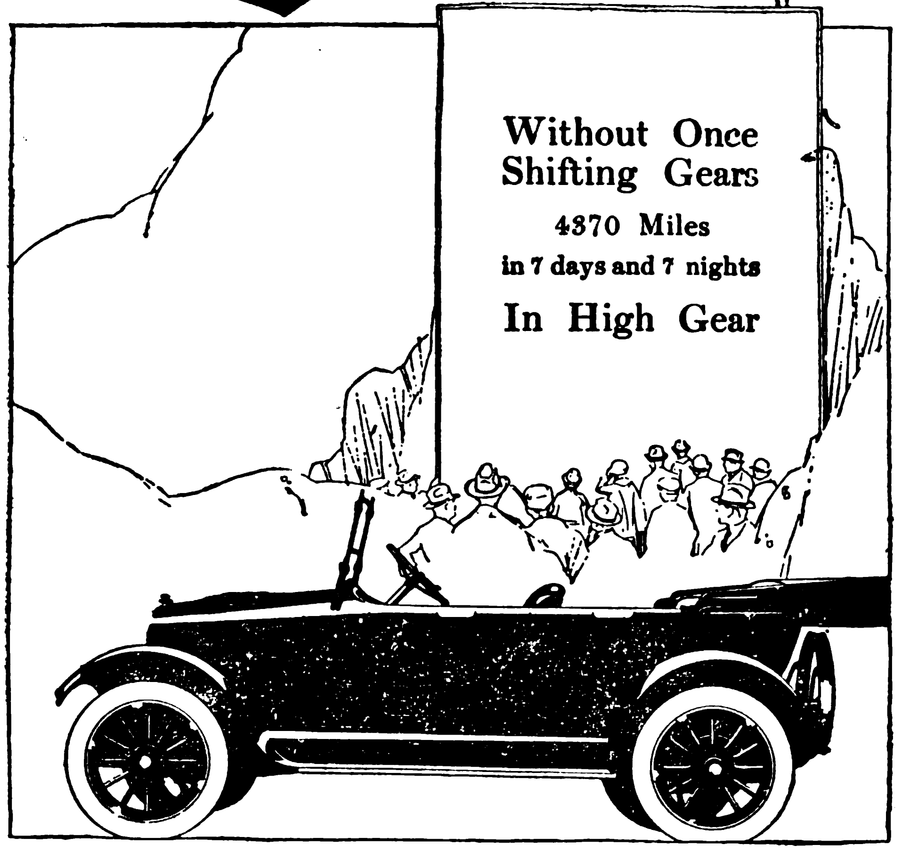

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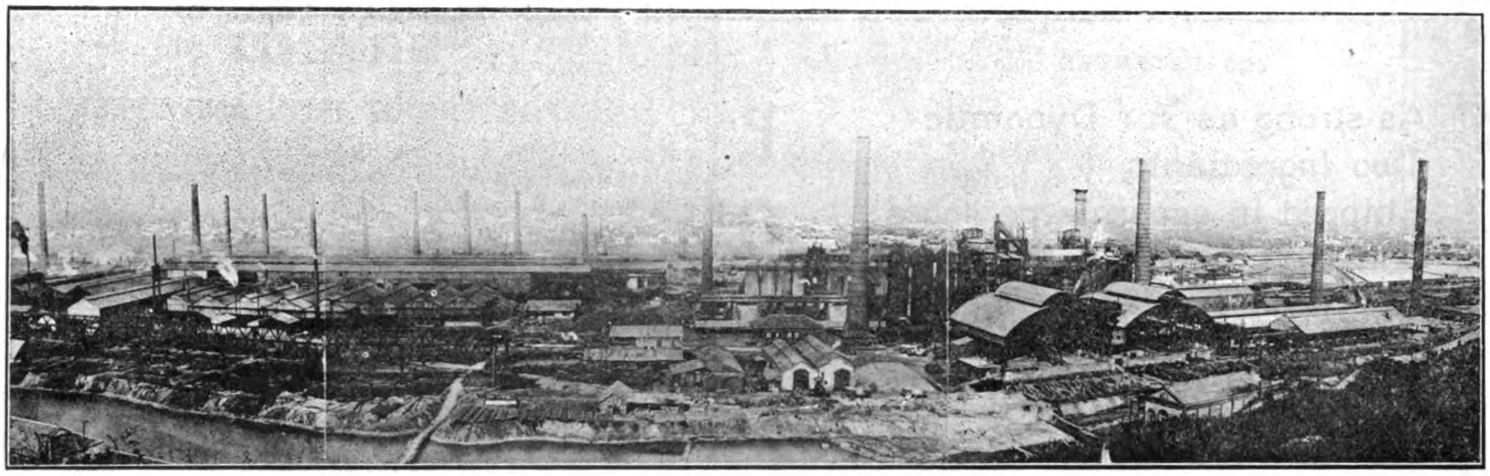

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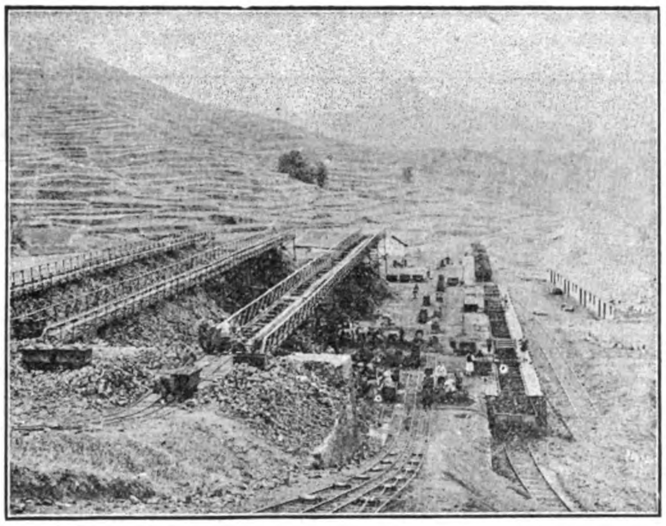
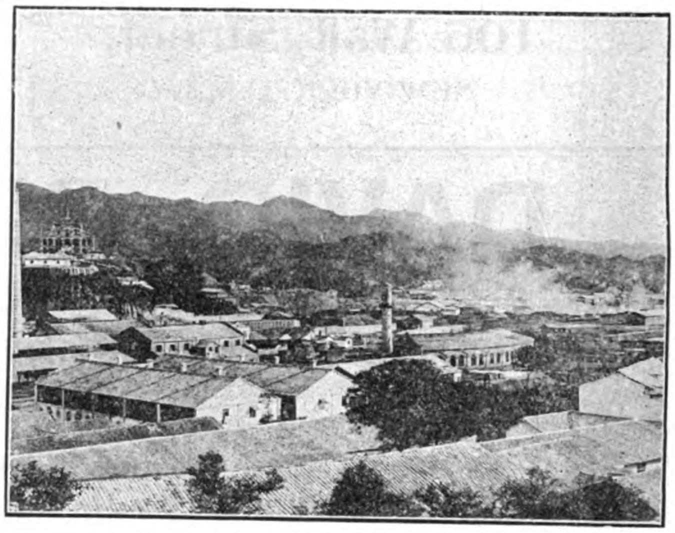


THE TIEHSHAN MINE AT TAYEH



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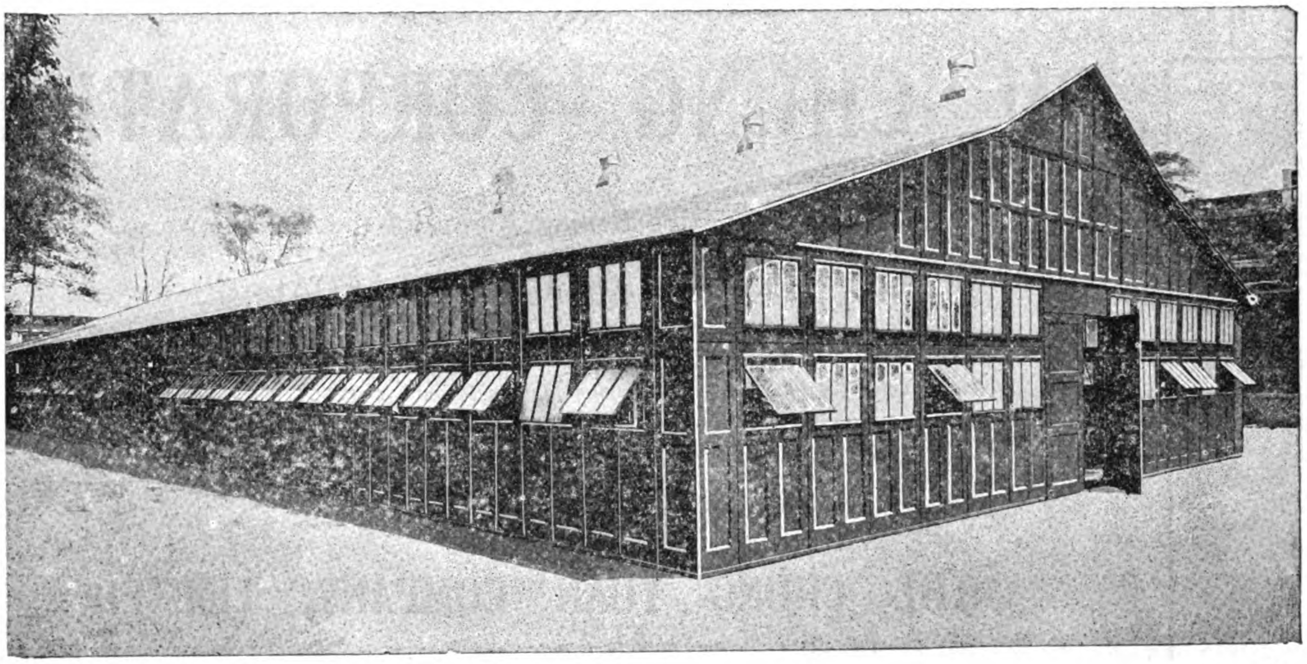

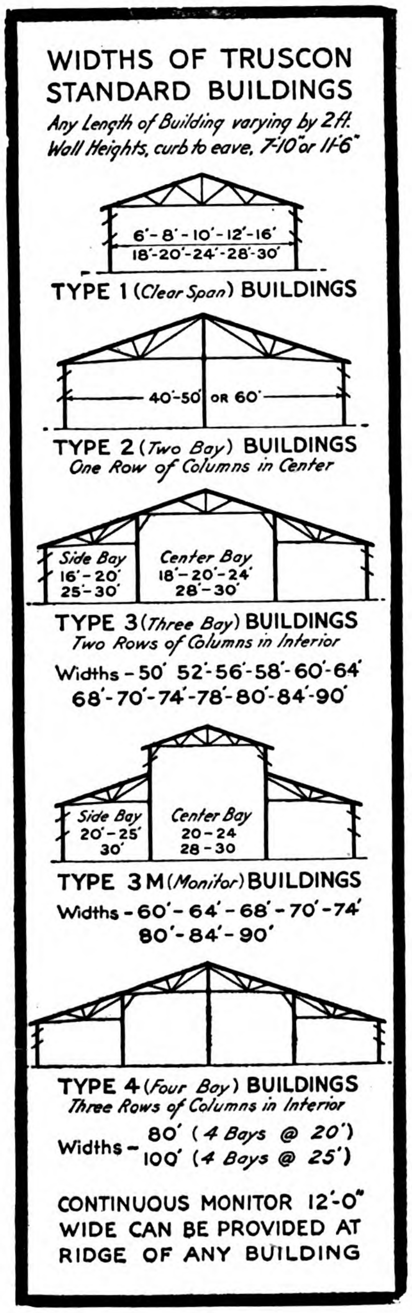

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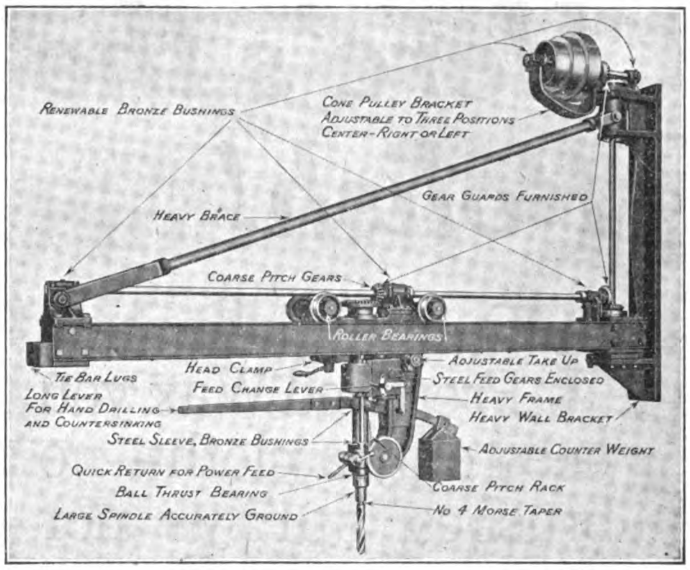

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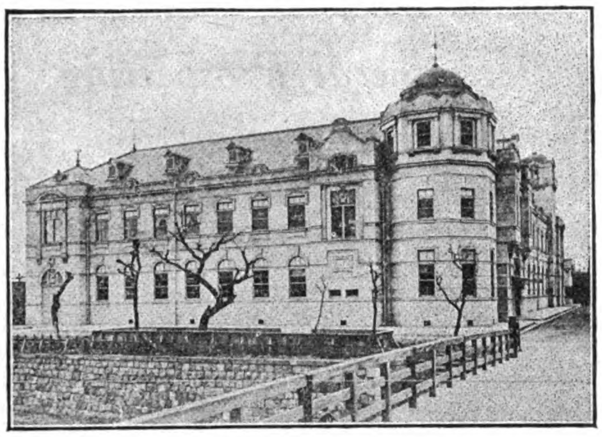

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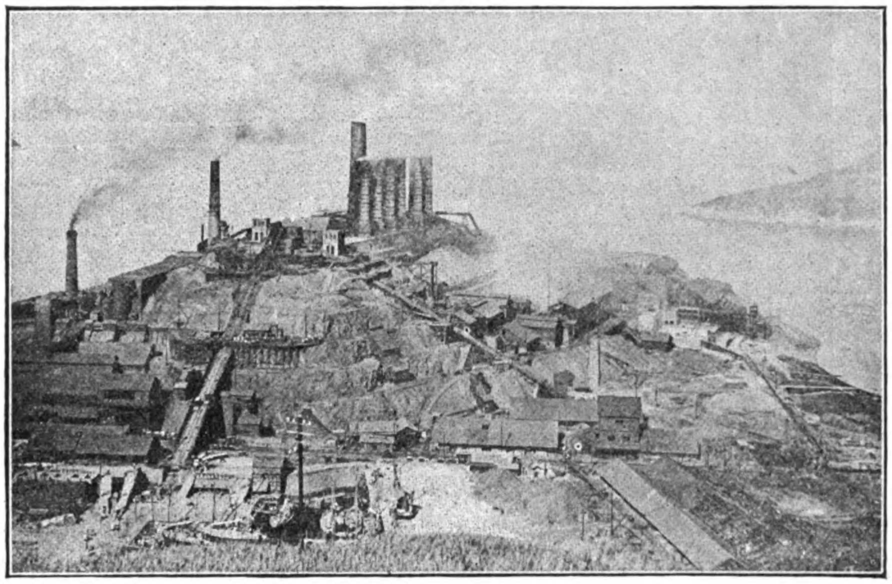

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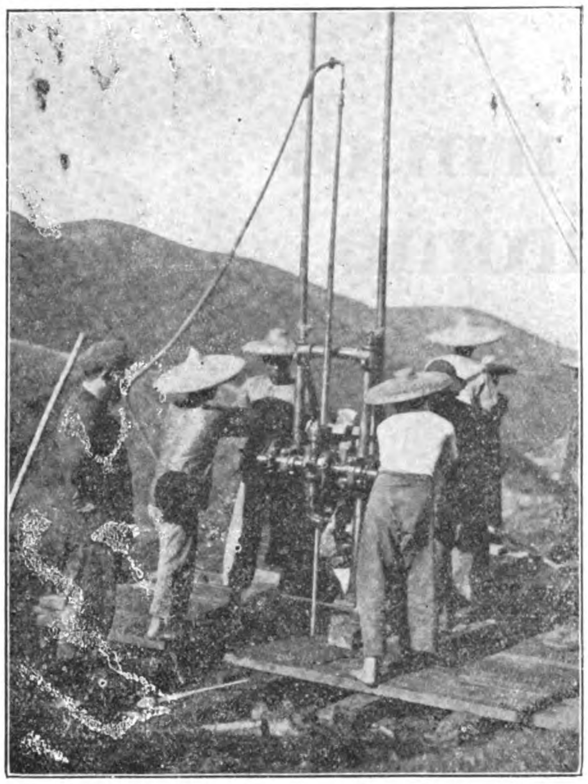

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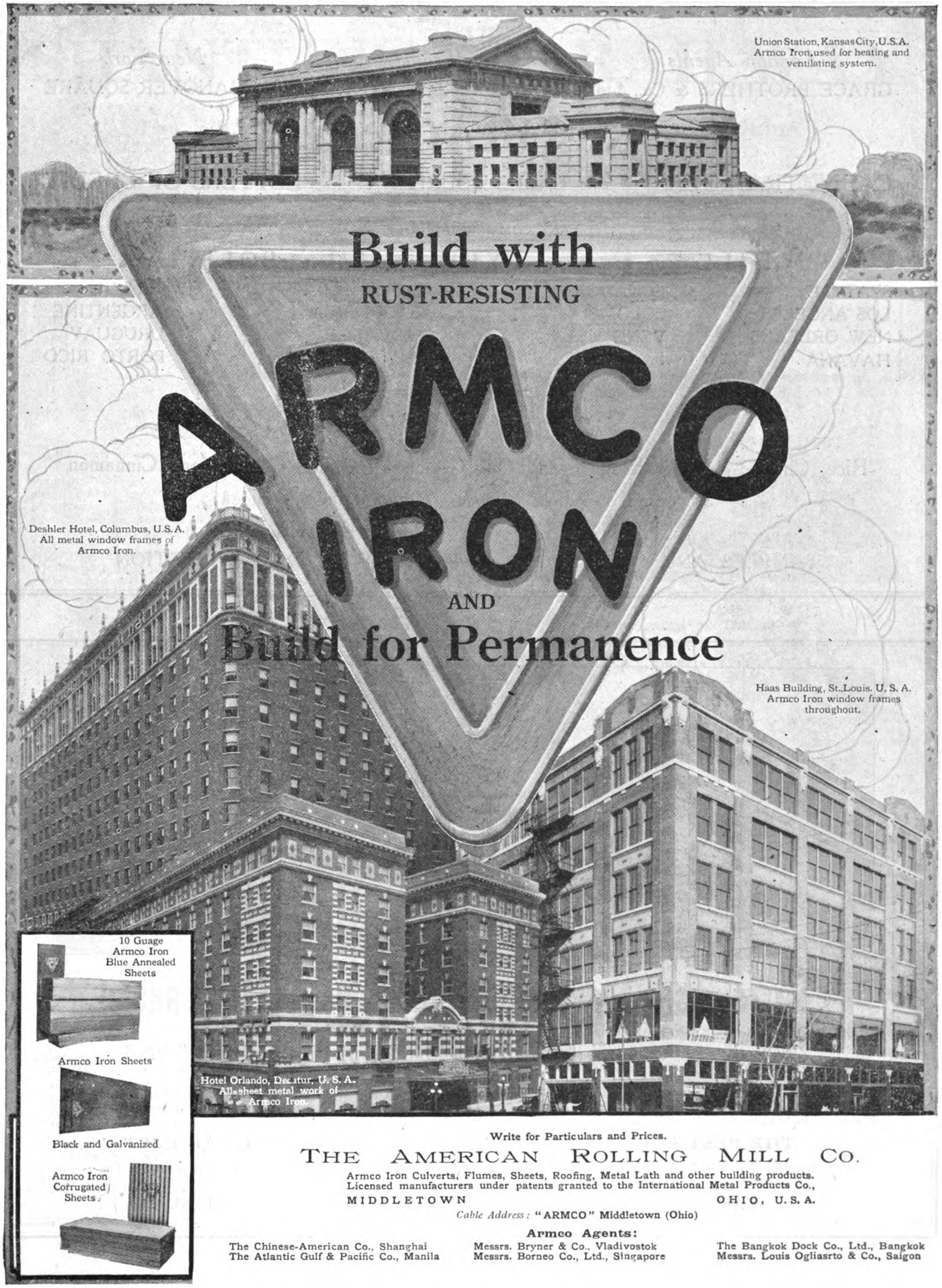
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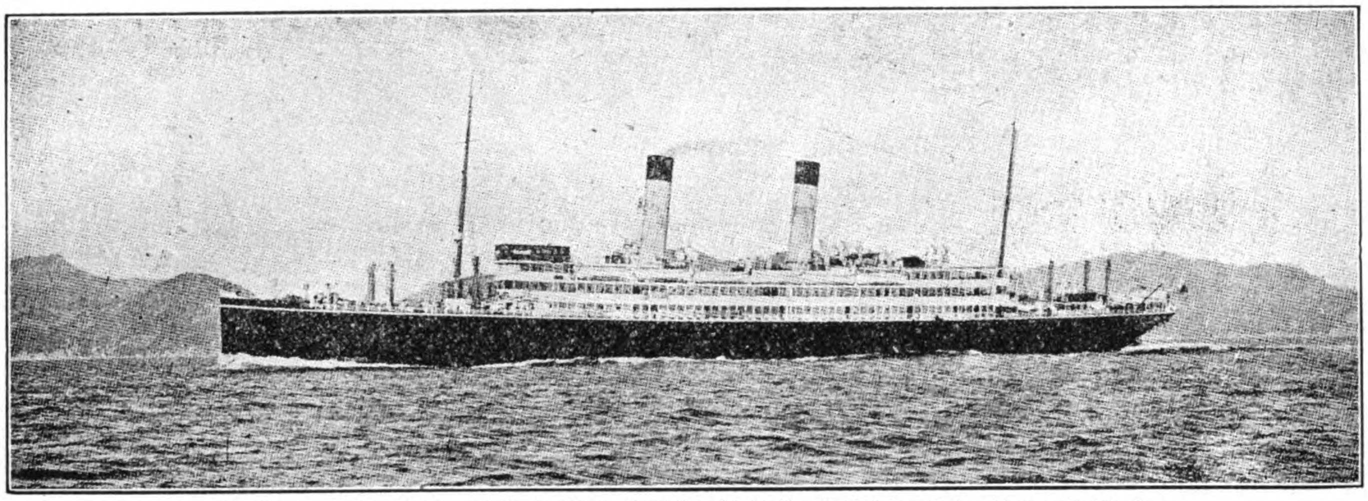

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Length on Blocks	513	,,
Width of Entrance on Top	88	,,
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Water on Blocks at Spring Tide	26½	,,

DOCK No. 2

Extreme Length	371	Ft.
Length on Blocks	360	,,
Width of Entrance on Top	66	,,
,, ,, ,, ,, Bottom	53	,,
Water on Blocks at Spring Tide	22	,,

DOCK No. 3

Extreme Length	722	Ft.
Length on Blocks	714	,,
Width of Entrance on Top	99½	,,
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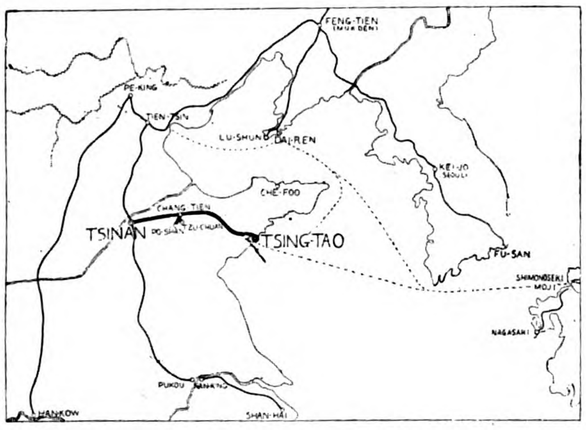


Ticket Agencies—The International Sleeping Car and Express Trains Co. and their Agents; Messrs. Thos. Cook & Son and their branch offices in various parts of the world.

Connections at Tsingtao—By steamer with Japan, Manchuria and Shanghai.

Connections at Tsinan—By Tientsin-Pukow Line with Tientsin, 6.40 a.m. daily, and with Pukow, 8.15 p.m. daily.

THROUGH TRAFFIC

Through passenger tickets are issued between the following principal stations of the Shantung Railway: Kiaochow, Kaomi, Fangtsu, Weihsien, Chingchow, Changtien, Chowtsun, Tsinan, Tzuchuan, Poshan, and the following points: In Manchuria—Port Arthur, Newchwang, Liaoyang, Fushun, Mukden, Tiehling, Kaiyuan, Changchun, Penchihu, Antung, and Dairen; in Japan—Yokohama, Nagoya, Yokkaichi, Osaka, Kobe, Ujina, Moji, Shimonoseki and Shanghai.

Steamer Connections—Steamers leave the wharves of the Large Harbour, Tsingtao, for Moji and Kobe every five days, for Shanghai about twice a week and for Dairen about three times a week.

For giving facilities to through passengers for Japan, a special train in connection with the night train No. 4 is operated from the Harbour Station to the Wharf, direct alongside the ship, on those days when the liners of the Nippon Yusen Kaisha, Osaka Shosen Kaisha, and Harada S.S. Co. are leaving.

Through passengers and their luggage are carried free of charge for this section.

Collieries—The Tzuchuan (Shisen) and Fangtzu (Boshi) Collieries are managed by the Mining Department of the Shantung Railway. At present the daily output of Tzuchuan coal is about 1,500 tons, far surpassing the amount taken out when the Germans were in control. The coal is well-known for its good quality and fair price.

Tsinan—Tsinan, the capital of Shantung, is the western terminus of the Shantung Railway, and also one of the most important stations on the Tientsin-Pukow Railway.

The Tsinan Railway Hotel, furnished in modern European style, is found on the upper floor of the Tsinan Station, under the control of the Shantung Railway Administration.

THROUGH TRAIN SERVICE

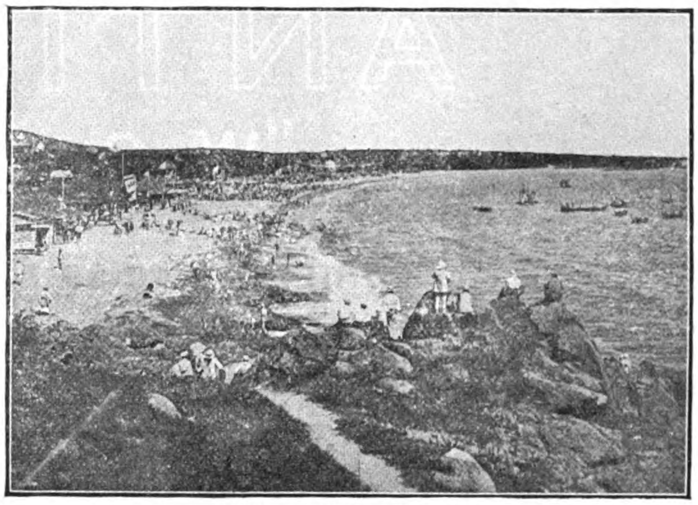
Train No. 1 leaves Tsingtao daily 8.00 a.m. arrives Tsinan 6.30 p.m.
Train No. 3 leaves Tsingtao daily 7.00 p.m. arrives Tsinan 7.00 a.m.
Train No. 2 leaves Tsinan daily 9.00 a.m. arrives Tsingtao 7.30 p.m.
Train No. 4 leaves Tsinan daily 8.30 p.m. arrives Tsingtao 8.30 a.m.

Local Trains run between Tsingtao and Weihsien, Fangtzu and Tsinan, and on the Poshan and Tzuchuan colliery branches.

Fares—Tsingtao-Tsinan—1st class, $14.30; 2nd class, $7.20.

First Class Sleeping Car—A first-class sleeping car is attached to night trains Nos. 3 and 4 running between Tsingtao and Tsinan. For a berth in the sleeping car three yen in silver is charged in addition to the ordinary first-class fare, irrespective of distance.

Dining Car—A dining car is attached to through trains Nos. 1, 2, 3 and 4 running between Tsingtao and Tsinan. Meals are served to order at any time.



BATHING BEACH, TSINGTAO.

Description of Tsingtao

Tsingtao is considered the most healthful place in all the Far East. The scenery including both mountains and sea, is most beautiful. There are quite extensive forest gardens, bits of woodland here and there, and many delightful shady lanes affording most interesting walks through them.

The roads are all broad, with very moderate gradients. They are of both macadamized and asphalt construction for vehicle traffic, while the sidewalks are either paved or concrete. These streets are practically all lined with beautiful shade trees.

The buildings are constructed principally in modern European style, with red tiles and white walls, contrasting pleasantly with the surrounding green mountains and blue sea.

The climate here is fine from Spring to Autumn, being neither too hot nor too cold. These climatic conditions make the place a favourite summer resort for Europeans and Americans from Shanghai, Tientsin, and other places.

The hotels are luxuriously furnished with up-to-date equipment and are under the efficient management of Mr. H. J. Hearne.

The hotel rates are $6.00 and up, per day, on the American plan.

TSINGTAO STATION

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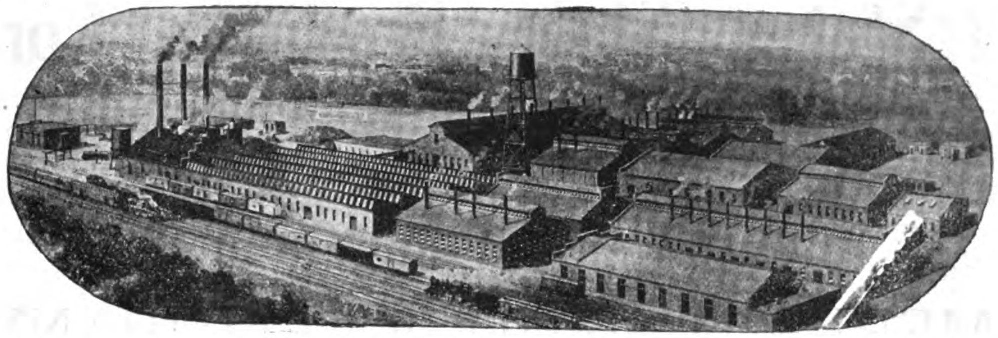

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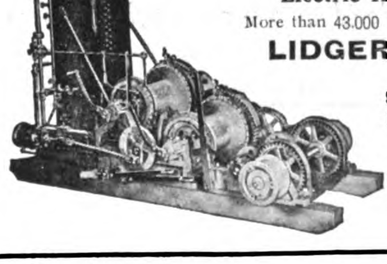

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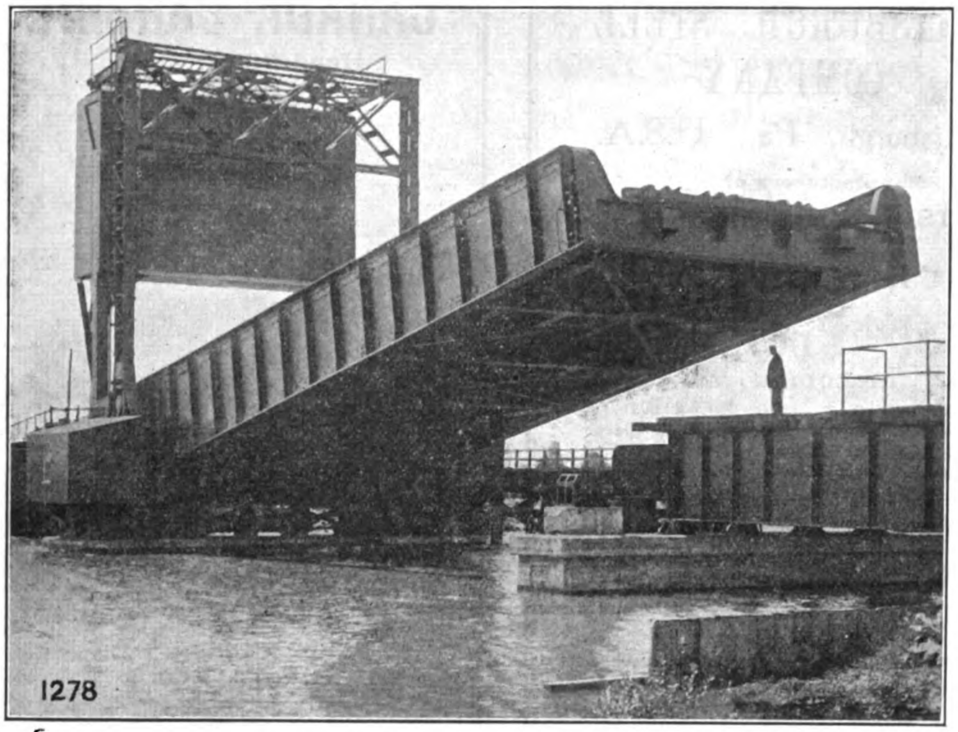

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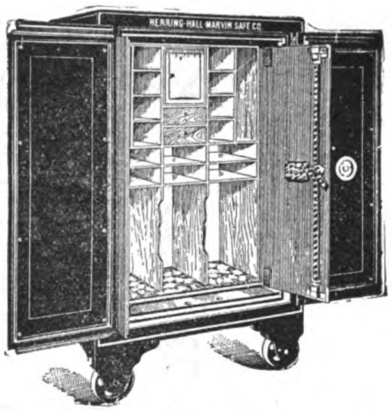

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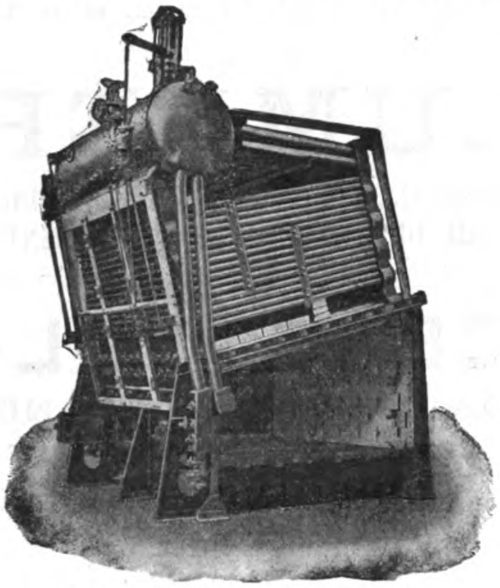

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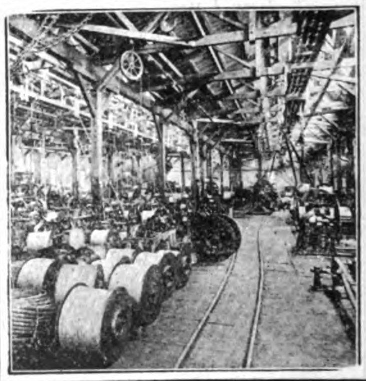

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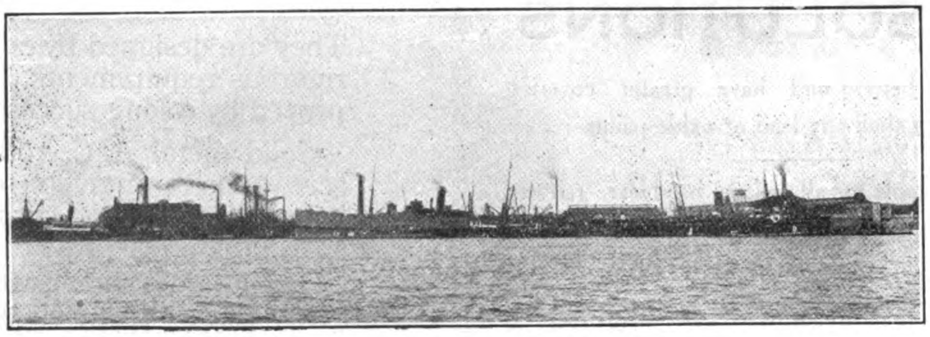

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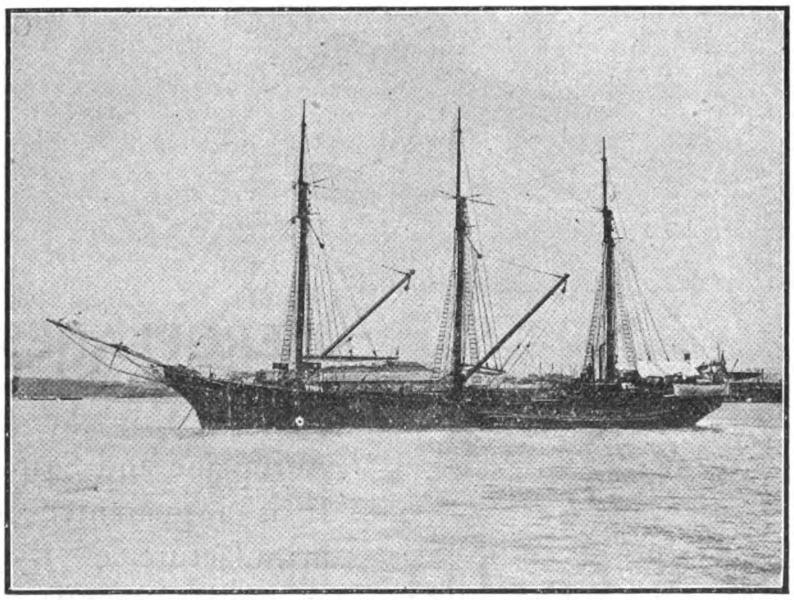

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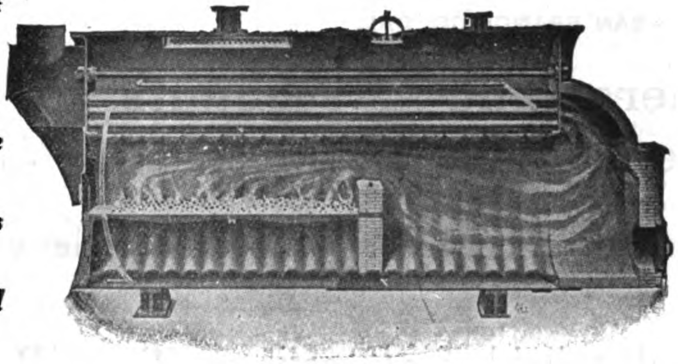

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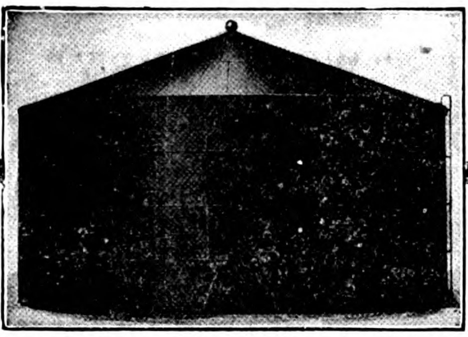
1865  1917

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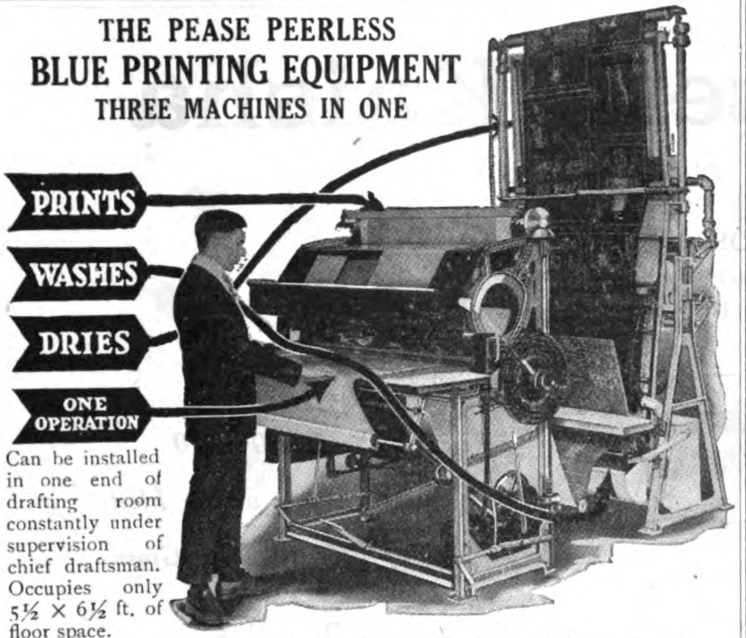

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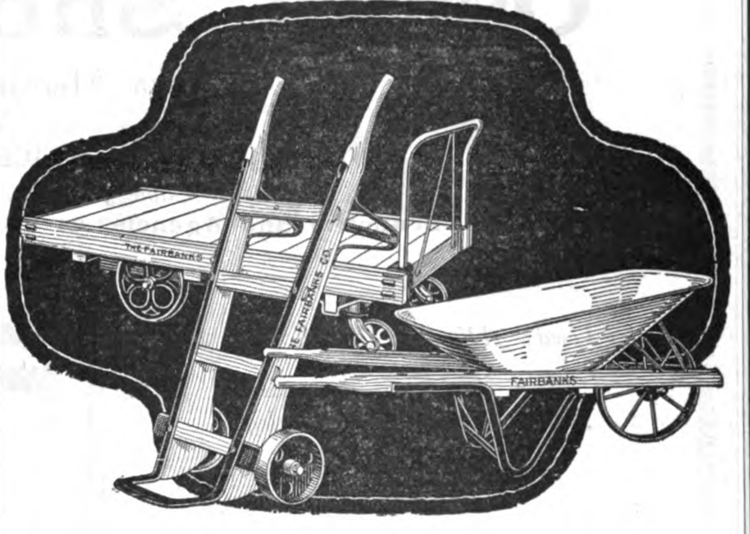

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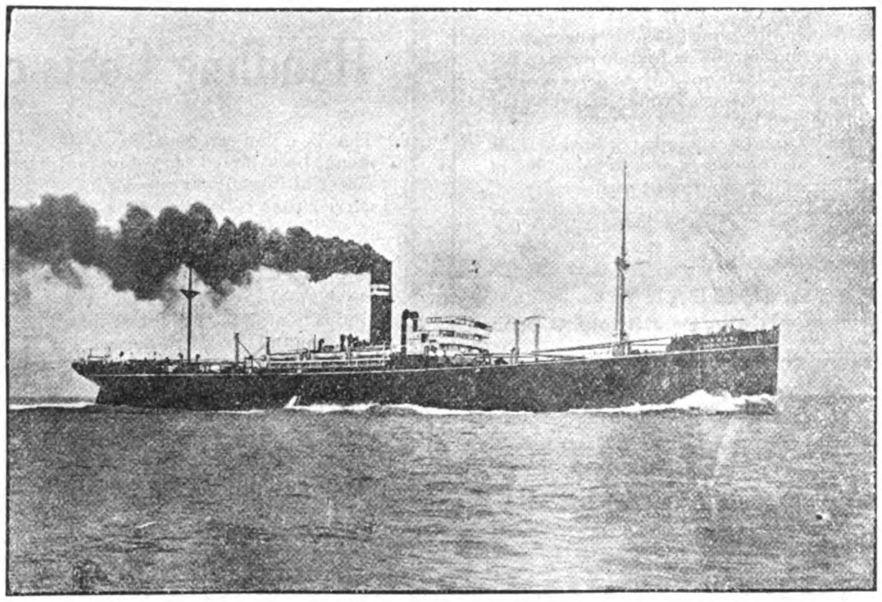

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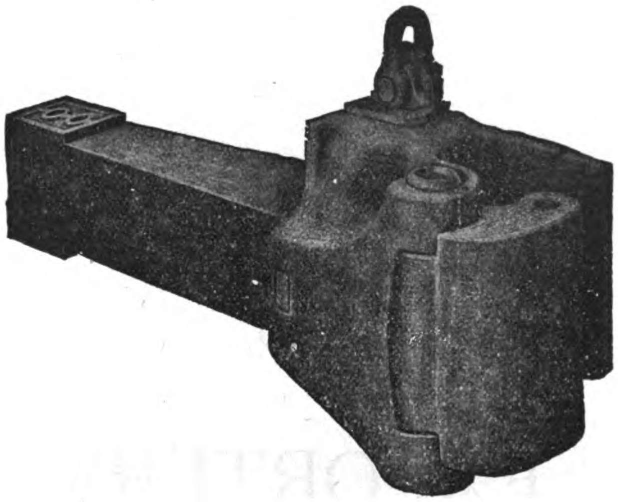

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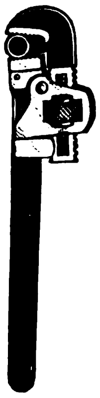

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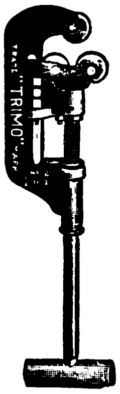

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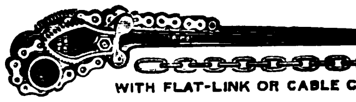

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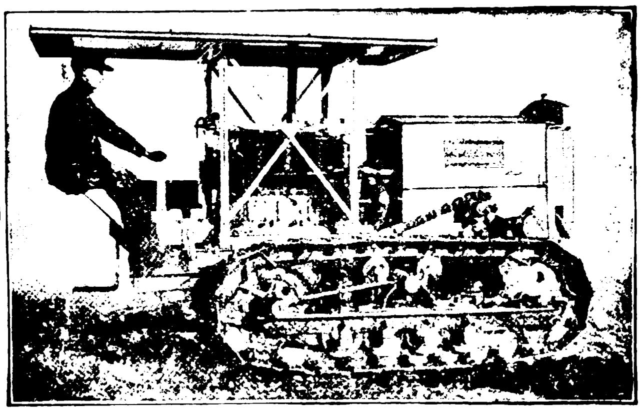

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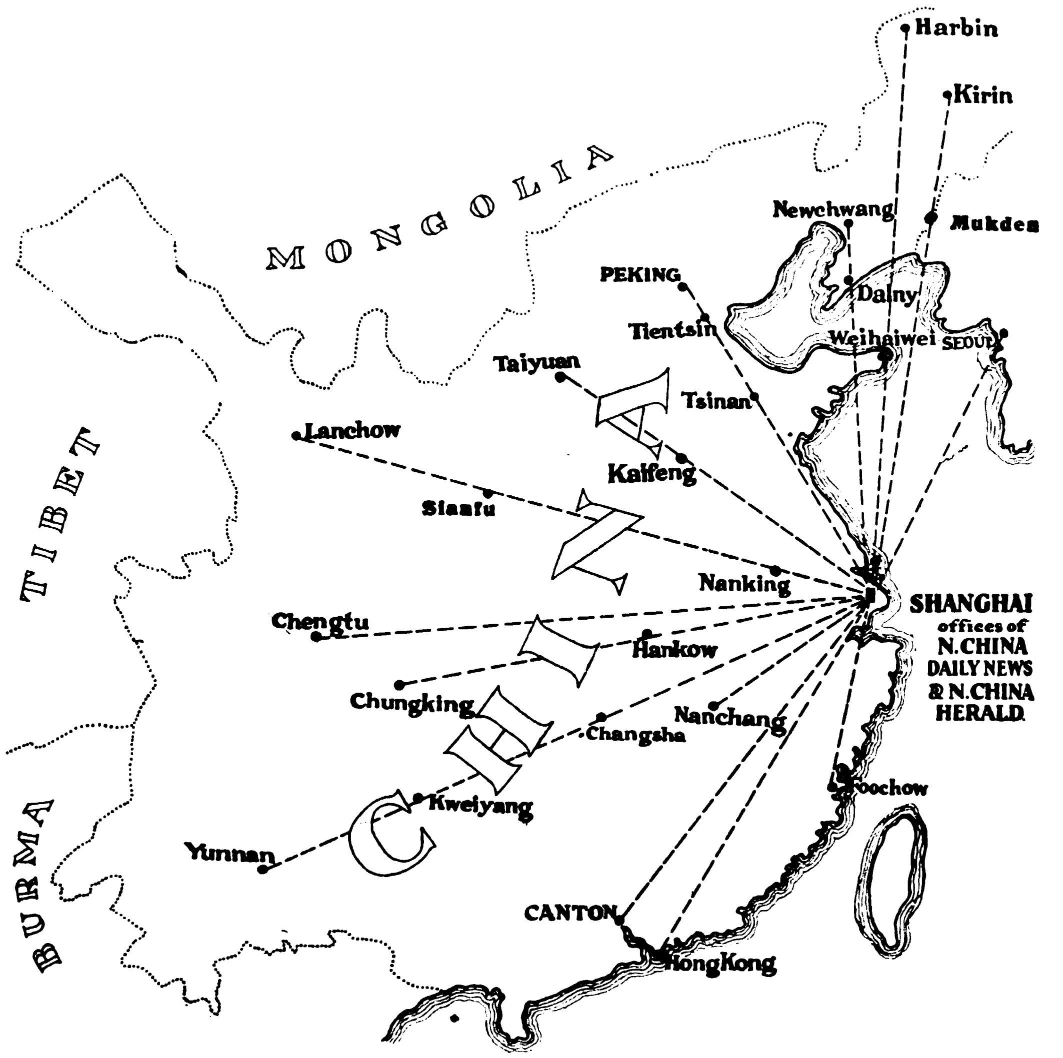

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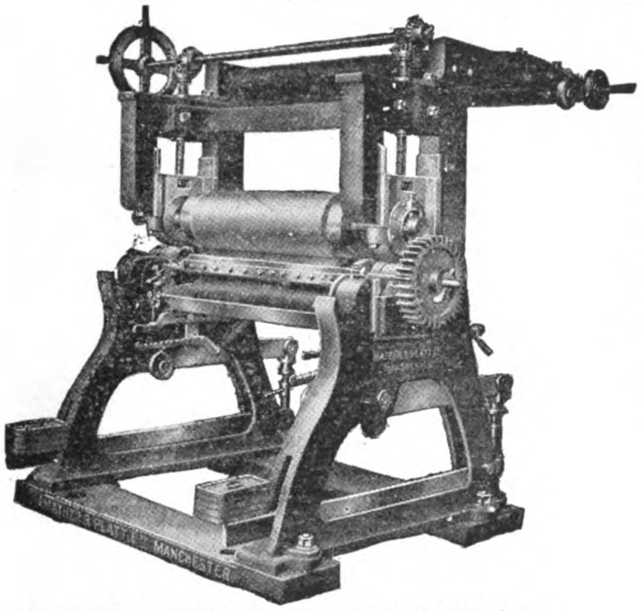

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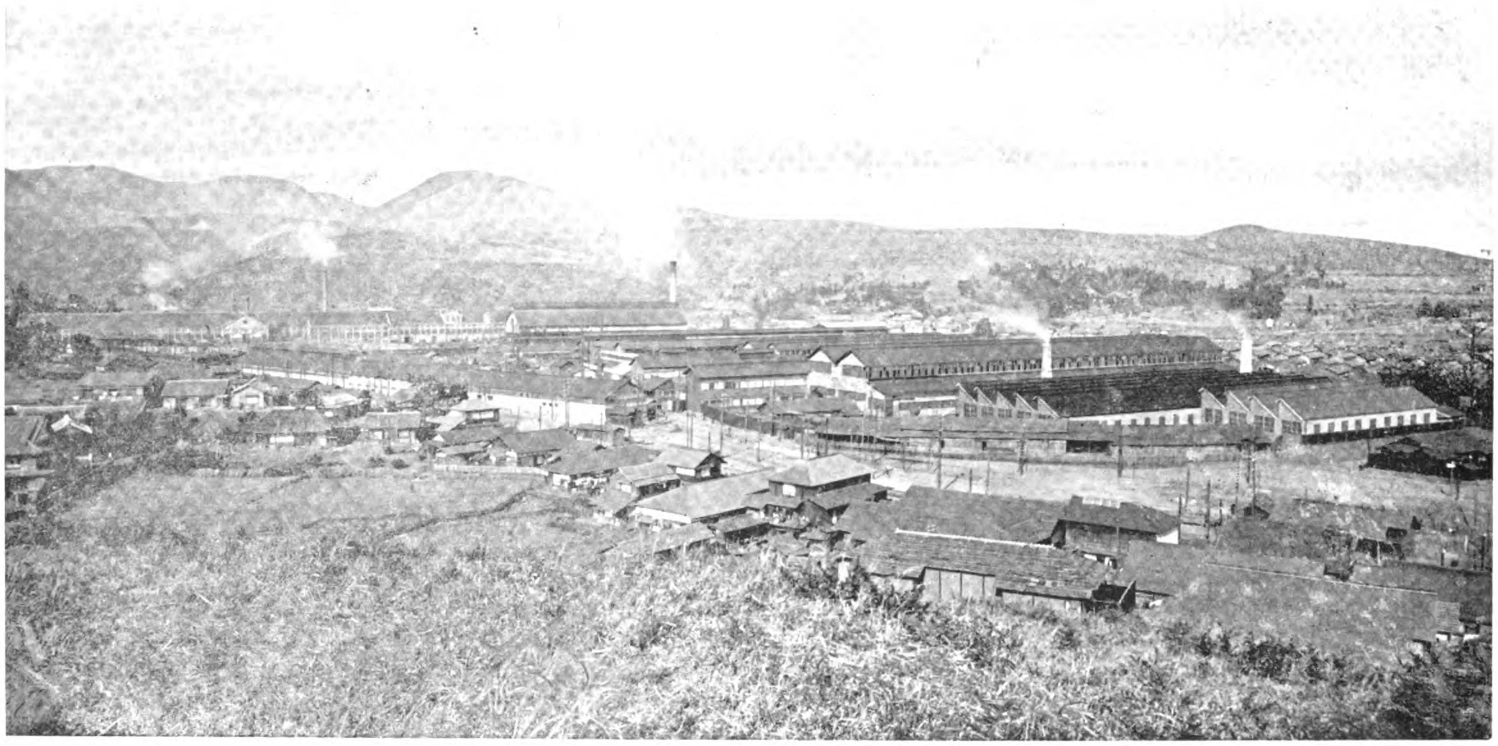

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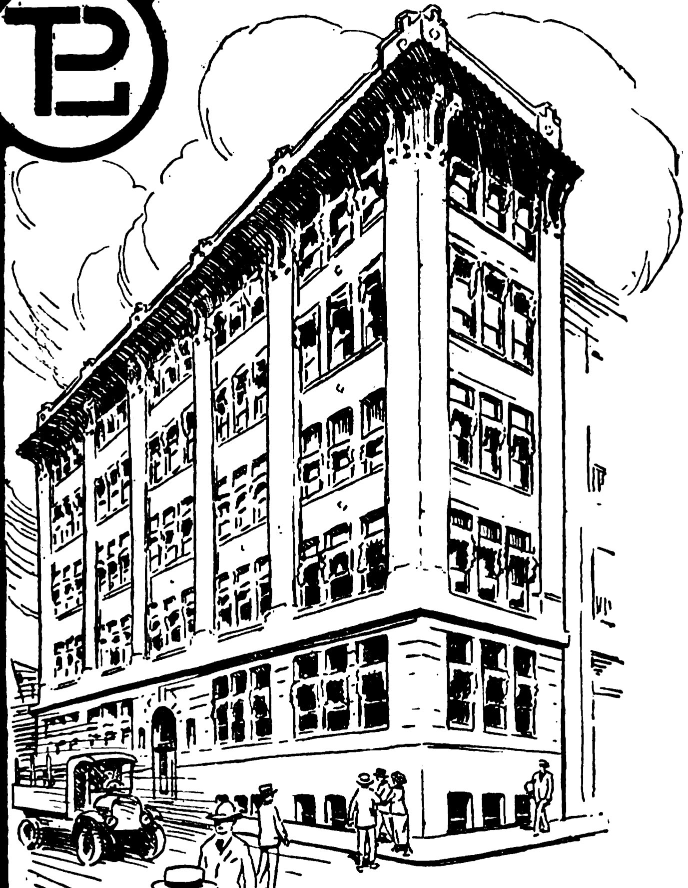

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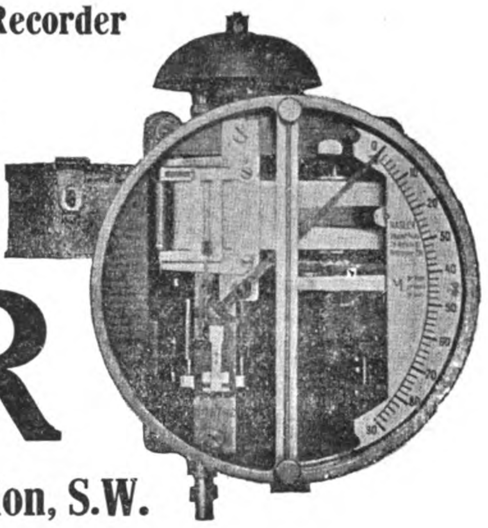

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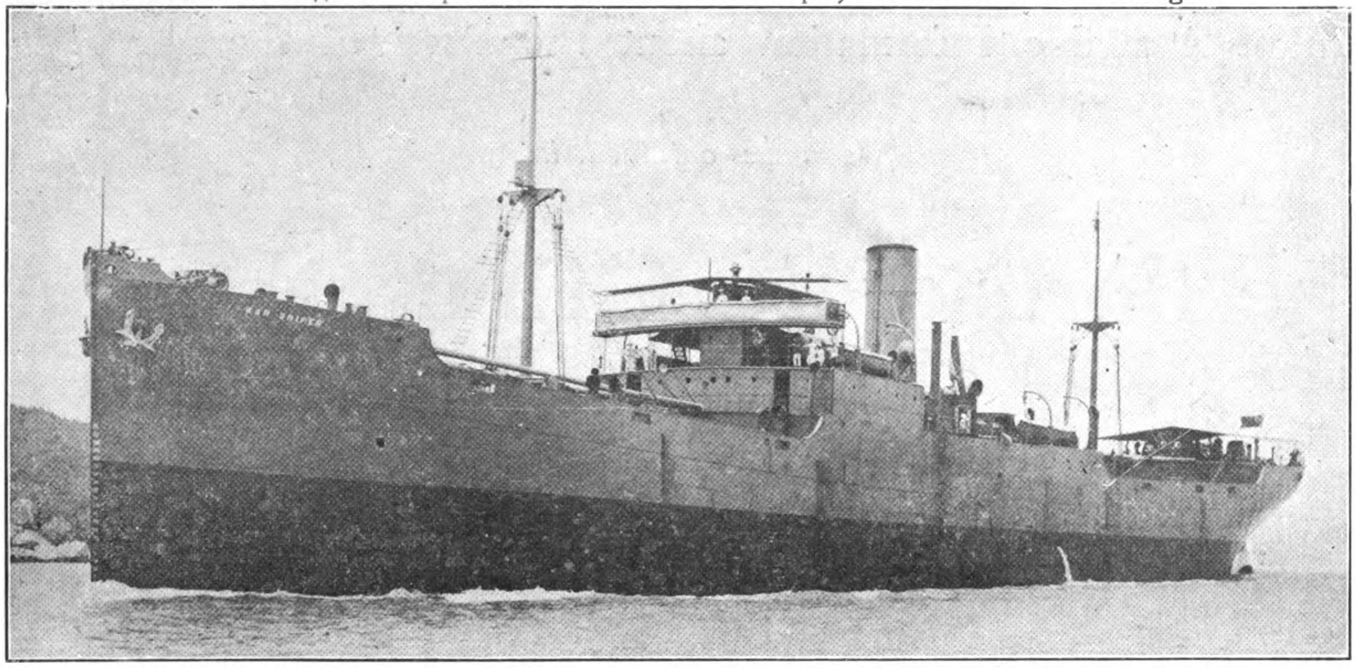

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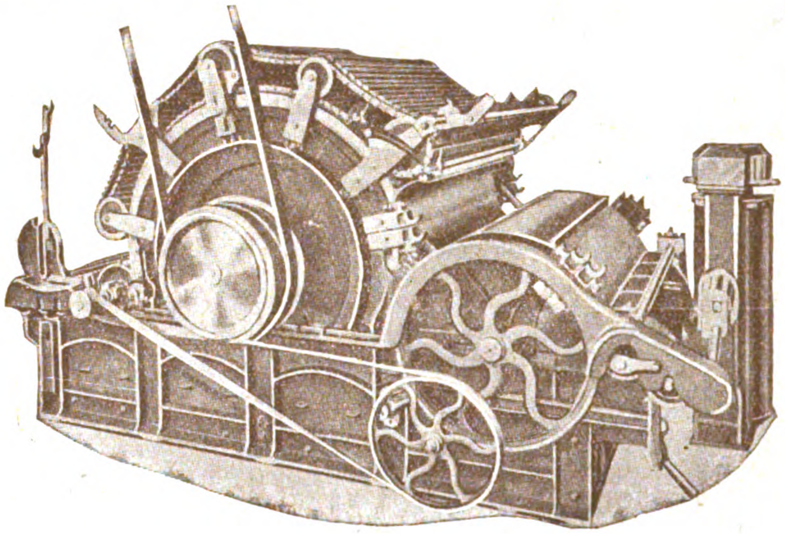

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FEBRUARY, 1920

VOL. XVI. No. 2

P.P. 9990 af

THE FAR EASTERN REVIEW

ENGINEERING FINANCE COMMERCE

遠東時報

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Japan's Burden and China's Opportunity

Engineering on Japan's Railways

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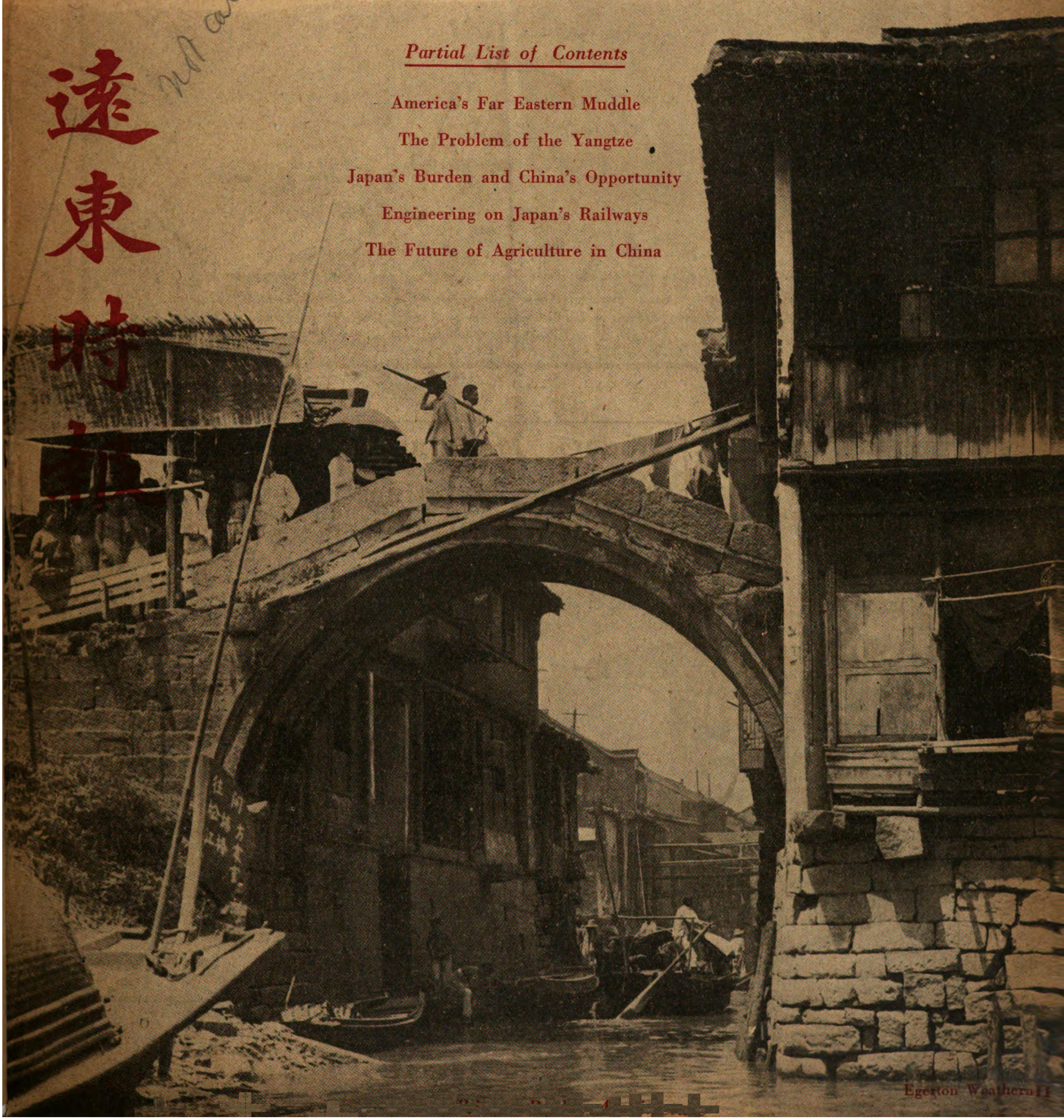

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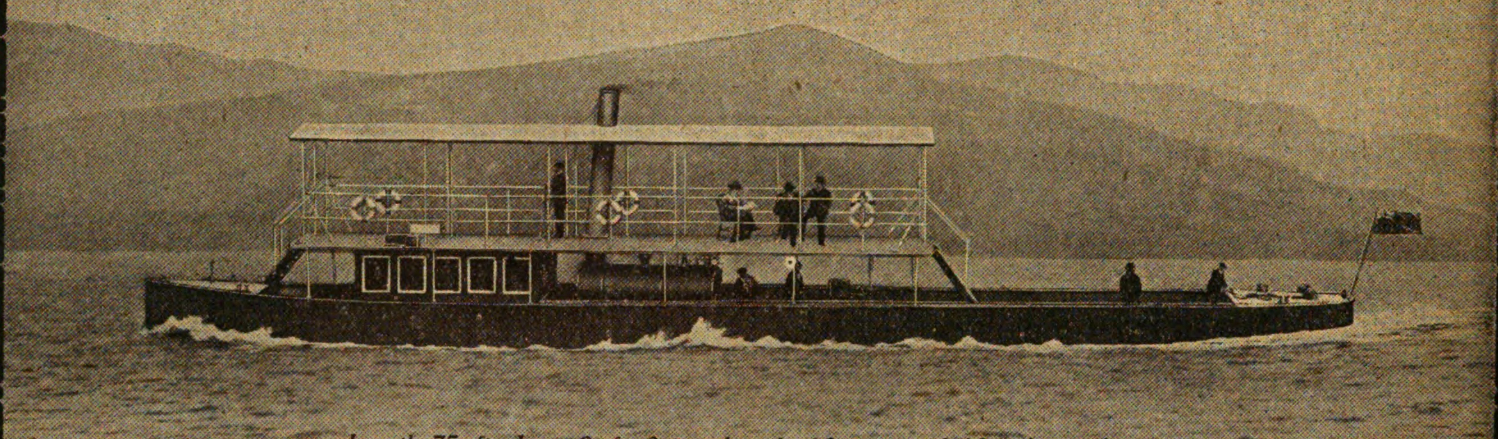

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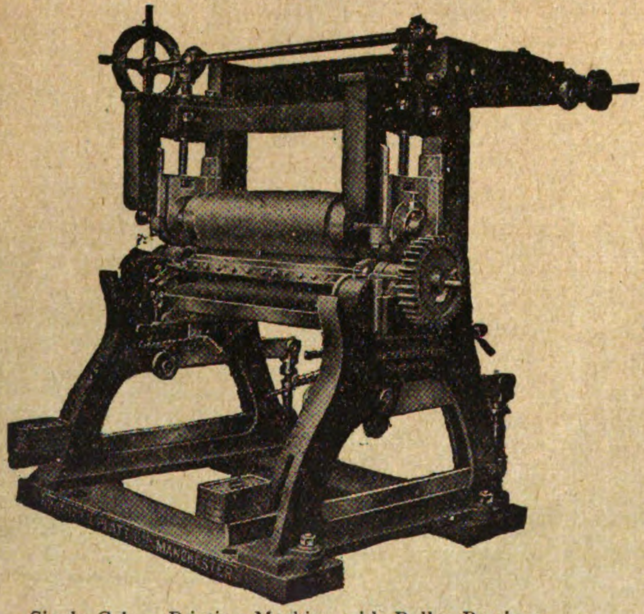

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The Editor does not necessarily personally accord with or support opinions expressed in signed articles appearing in the FAR EASTERN REVIEW. Any expressions of opinion on subjects dealt with by this paper will, if signed by the writer, be published.

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The old stone foot-bridge on the cover is an artistic bit of Chinese bridge architecture some centuries old.

The Chinese throw these graceful bridges across their innumerable canals, creeks and streams throughout this vast land. This one happens to be of stone, but they are frequently of swaying bamboo, or trunks of trees; or, what is a gem of primitive artistry, a single tree trunk with bamboo handrail, while out in the west much engineering skill is shown in the erection of great stone structures and suspension bridges of chains, iron, or bamboo.

There is a carelessness, almost an abandon in the simple construction of many of the quaint bridges in Kiangsu, but they never lack grace.

At sunset when dirt and squalor are mercifully softened they are most picturesque. One forgets then the muddy water swirling beneath and the filth of the shabby river craft.

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CHINA

China (Chung Kuo) comprises China Proper (eighteen provinces), Manchuria, Mongolia, Sinkiang and Tibet.

Area and Population.—Accurate figures of area and population are impossible to secure. It is generally accepted that the total area is between 4,278,352 and 4,376,000 square miles. The area of China Proper—that is, the provinces of Chihli, Shantung, Shansi, Shensi, Honan, Kiangsu, Kiangsi, Anhwei, Chekiang, Fukien, Hupeh, Hunan, Kansu, Szechuan, Kuangtung, Kuangsi, Kweichow and Yunnan—is set down at 1,532,815 square miles. Its length from north to south is 1,860 miles, and its breadth 1,520 miles.

The estimated population of China Proper ranges from 271,770,000 (331,000,000 is the Mingchengpu census of 1910) to 407,253,029. The generally accepted figure is that of the Mingchengpu census. The total population for the whole of China is estimated at between 342.6 millions and 448,000,000.

The Foreign Population in 1918, according to Customs reports, was as follows: American, 5,766; Austrian, 271; Belgian, 360; Brazilian, 16; British, 7,953; Danish, 475; Dutch, 377; French (including 918 proteges), 2,580; German, 2,661; Hungarian, 7; Italian, 535; Japanese, 159,950; Norwegian, 279; Portuguese, 2,417; Russian, 59,719; Spanish, 298; Swedish, 530; Non-treaty Powers, 343; total, 244,527. The figures of German and Austrian population in 1918 were greatly reduced by repatriation in 1919.

Government.—The Government of the eighteen provinces is entrusted to civil and military Governors, and under them each province is subdivided into circuits superintended by Taoyins or intendants, and again into districts. All the territorial officials are appointed by the Central Government, and the Provincial Governors, though free to act independently in many matters of local detail and finance, are responsible to the Central Government at Peking in all important questions, and especially in foreign affairs.

The Army.—The total strength in all forces after the rebellion in 1913 was estimated at 600,000. As various commanders recruit to suit their own purposes no accurate figures are available, but at the end of 1917 it is probable that 800,000 men were under arms.

The Navy.—This arm of the defense is out of date. China possesses two protected cruisers built in 1911 (2,756 tons), four older protected cruisers (4,300-3,000 tons), three torpedo gunboats (850 tons), eleven gunboats (750-550 tons), four destroyers (400 tons), and eight small torpedo boats (120 tons).

Currency.—The standard currency in China is silver, its unit being the Tael, which is not a coin but a weight, its value varying considerably. In 1882, in Shanghai, the tael was worth 5s. 2d.; in 1892 the Haikwan Tael (the official Customs Tael) was worth 4s. 4½d.; in 1907, 3s. 3d.; in 1917, 4s. 3 13/16d.; in 1918, 5s. 3 7/16d. Various silver dollars circulate, as well as copper cents, while cash is greatly used among the poorer classes and country people. The cash should weigh one-tenth of a tael and have the value of 1,000 cash to a silver tael, but this standard is never maintained. In 1882 a Shanghai tael (5s. 2d.) was equal to 1,690 cash, and in 1902 when the tael was worth 2s. 7⅝d. it was equal to 1,240 cash.

Foreign Trade of China.—In 1918 the net value of foreign trade of China was the highest on record, the total being Hk. Tls. 1,040,776,113, an increase of Hk. Tls. 28,325,709 over that for 1917. Net imports of Hk. Tls. 554,893,082 compared with Hk. Tls. 549,518,774 in 1917; and exports of Hk. Tls. 485,883,031 compared with Hk. Tls. 462,931,630 in 1917.

Treaty Ports, Trading Ports, and Ports of Call.—There are forty-eight treaty ports in China, which are classified by the Chinese Maritime Customs as follows:

Northern Ports: Aigun, Sansing, Manchouli, Harbin, Suifenho, Hunchun, Lungchingtsun, Antung, Tatungkow, Dairen, Newchwang, Chinwangtao, Tientsin, Lungkow, Chefoo and Kiaochow.

Yangtze Ports: Chungking, Ichang, Shasi, Changsha, Yochow, Hankow, Kiukiang, Wuhu, Nanking and Chinkiang.

Central Ports: Shanghai, Soochow, Hangchow, Ningpo and Wenchow.

Southern Ports: Santuao, Foochow, Amoy, Swatow, Canton, Kowloon, Kongmoon, Samshui, Lappa, Wuchow, Nanning, Kiungchow and Pakhoi.

Frontier Ports: Lungchow, Mengtze, Szemao and Tengyueh.

Ports Opened to Trade are: In *Manchuria*: Mukden, Fakumen, Fenghwangcheng, Sinminfu, Teihling, Tungkiangtze, Yingkow (Newchwang), Liaoyang, Changchun, Kirin, Ninguta, Chuizuchien, Toutaokow, Tsitsihar, Hailar. In *Sinkiang*: Kashgar. In *Shantung*: Chow'sun, Tsinanfu, Weihaiwei, Weihsien. In *Kiangsu*: Woosung. In *Tibet*: Gartok and Gyangtze.

Ports of Call: For Passengers and Cargo: In *Kuangtung*—Kumchuk, Shuihsing, Pakto, Takhing, Lating, Dosing. In *Kiangsi*—Hankow. In *Anhwei*—Tatung, Anking. In *Hupeh*—Wusueh and Luk'kow.

For Passengers: In *Kiangsu*—Kiangyin, Icheng. In *Hupeh*—Hwangshihkang, Hwangchow. In *Kuangtung*—Fengtsun, Kaukong, Yutshing, Lukpa, Howlik, Loto, Maning, Yungyan, Kulo and Jungki.

Railways.—Government railways in operation	3,793 miles
Concessioned railways in operation	1,847 „
Private railways in operation	150 „
Total railways in operation	5,790 miles

Government railways under construction are about 330 miles.

Weights and Measures.—1 Tael (*Liang*) = 583.3 grains (1⅓-oz. avoirdupois) = 37.783 grams.

16 Taels = 1 Catty (*Chin*) = 1⅓-lb. avoirdupois = 604.53 grams.

100 Catties = 1 Picul (*Tan*) = 133⅓-lb. avoirdupois = 60.453 kilograms = 147.67 Russian pounds.

Length: 1 Chih = 14.1 inches or 0,358 meters.

1 Li = about one-third of a mile (or theoretically 2,115 feet, or two-fifths of a mile).

Area: 1 Mow (Shanghai) = one-sixth of an English acre.

Capacity: 1 Tow (for tribute) = 629 cubic inches (10.31 liters).

Rivers.—The Yangtze-kiang is 3,200 miles in length. It rises in Tibet and drains some three-quarters of a million square miles of country. It is navigable for large steamers to Hankow (600 miles from the sea), for slightly smaller vessels to Ichang (1,000 miles), for small steamers and steam launches for 300 miles farther, and for junks for 200 miles farther; or a total distance of half its length is available for the transport of merchandise. The river was opened to foreign trade by the Treaty of Tientsin (1858).

The Yellow River, or Huang-ho, rises about 100 miles from the source of the Yangtze. It is from 2,500 to 2,700 miles long, but is navigable only by junks, the vast quantities of silt carried by it and deposited in its channel rendering steam navigation impossible.

The Sikiang, or West River, rises in Yunnan and reaches the sea by several months near Canton. Its length is about 1,000 miles. Steamers go as far as Wuchow, some 220 miles from Canton and launches some 200 miles farther. Junks navigate it to near its source.

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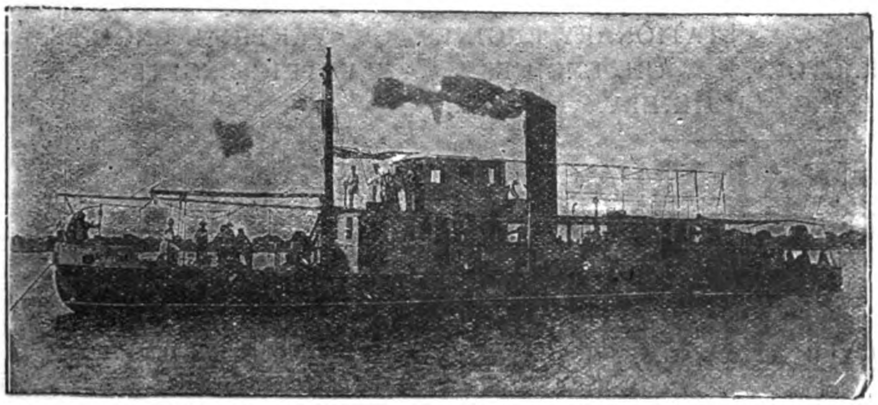

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CATALOGUE "A." "Stag" Ore Crushers and Stone-breakers, Tube and Ball Mills, Separators, Conveyors, etc.
CATALOGUE "B." "Imperial" Manganese Steel Bars, Castings, Forgings, etc.
CATALOGUE "C." Colliery Plant, Screens, Tipplers, etc.
CATALOGUE "D." Motor Car and Aircraft Steels.
CATALOGUE "E." Cement Making Machinery, Rotary Kilns, Rotary Dryers, etc.
CATALOGUE "F." Railway Special Points and Crossings in "Imperial" Manganese Steel, Patent-Rolled "Imperial" Manganese Steel Rails, etc.
CATALOGUE "H." Tramway Special Trackwork.

Write for Catalogue which interests you.

JAPAN OFFICE:
2, MITSU BISHI BUILDINGS,
1 YAESU-CHO,
KOJIMACHI KU,
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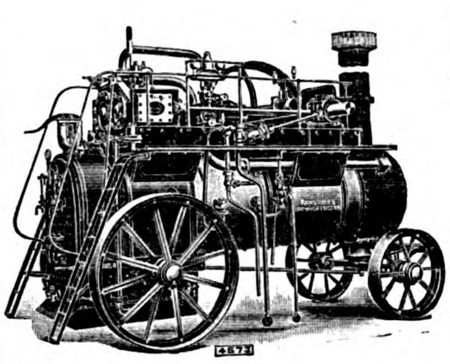
Edgar Allen & Co. Limited

Imperial STEEL Works, Sheffield.

AGENTS FOR CHINA:
JARDINE, MATHESON & CO., LTD.
ENGINEERING DEPT.
8A YUEN-MING-YUEN ROAD,
SHANGHAI
AND AT HONGKONG, HANKOW,
TIENTSIN, PEKING, ETC.



Engines & Boilers

FOR ALL PURPOSES

Ransomes, Sims & Jefferies, Ltd.

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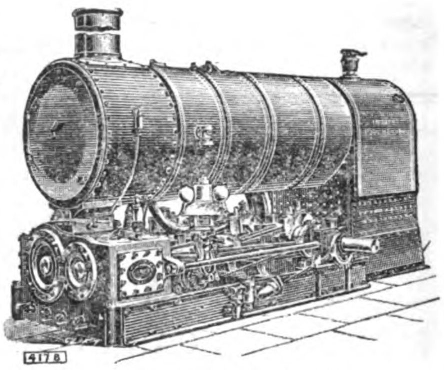

PORTABLE AND TRACTION STEAM ENGINES, STATIONARY ENGINES, VERTICAL ENGINES, BOILERS OF ALL KINDS, OIL TRACTORS, OIL ENGINES, ELECTRIC ENGINES, MINING MACHINERY.

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TEL. ADDRESS: "WHITTALL" TIENTSIN
14, 16 & 18 VICTORIA TERRACE,
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TEL. ADDRESS: "WHITTALL" PEKING
32 TA JUAN FU HUTUNG,
PEKING

International Banking Corporation

OWNED BY THE NATIONAL CITY BANK OF NEW YORK

CAPITAL AND SURPLUS ... ... U.S. $8,500,000
UNDIVIDED PROFITS ... ... U.S. $1,054,000

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55 WALL STREET, NEW YORK

LONDON OFFICE: 36 BISHOPSGATE, E.C.
LYONS OFFICE: 27 PLACE TOLOZAN
SAN FRANCISCO OFFICE: 232 MONTGOMERY STREET

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PHILIPPINES
MANILA
CEBU

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MENTS
SINGAPORE

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PORT OF SPAIN

Commercial and Travellers' Letters of Credit, Bills of Exchange and Cable Transfers bought and sold. Current accounts opened and Fixed Deposits in local and foreign currencies taken at rates that may be ascertained on application to the Bank.

H. C. GULLAND, *Manager.*

1A KIUKIANG ROAD.

BANQUE DE L'INDO-CHINE.

Capital	**Frs. 48,000,000**
Reserves	**„ 50,000,000**

Succursales et Agencies:

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Battambang	Hankéou	Nouméе	Pondichery	Tientsin
Canton	Hanoi	Papecte	Saigon	Tourane
Djibouti	Hongkong	Peking	Shanghai	

Bankers:

IN FRANCE: Comptoir National d'Escompte de Paris, Credit Lyonnais; Banque de Paris et des Pays-Bas; Crédit Industriel et Commercial Société Général.

IN LONDON: The Union of London and Smith's Bank, Ld.; Comptoir National d'Escompte de Paris; Crédit Lyonnais.

The Shanghai Agency undertakes all banking operations and exchange business; grants credits on goods and approved securities and receives deposits on current and fixed deposits according to arrangement.

L. ARDAIN, *Manager.*

THE BANK OF TAIWAN, LTD.

Incorporated by Special Imperial Charter, 1899.

CAPITAL SUBSCRIBED	**Yen 30,000,000**
CAPITAL PAID-UP	**„ 22,500,000**
RESERVE FUNDS	**„ 6,580,000**

President: TETSUTARO SAKURAI, Esq. **Vice-President:** KOJURO NAKAGAWA, Esq.

Directors:

IYETOSHI SADA, Esq. KYOROKU YAMANARI, Esq. SHINGO MINAMI, Esq.

Head Office: TAIPEH, FORMOSA (TAIWAN)

Branches:
- **JAPAN:** Tokyo (General Manager's Office), Kobe, Osaka, Yokohama.
- **TAIWAN:** Keelung, Tainan, Takow, and 10 other points.
- **CHINA:** Amoy, Canton, Foochow, Hankow, Kiukiang, Shanghai, Swatow.
- **OTHERS:** Batavia, Bombay, Hongkong, London, New York, Semarang, Singapore, Soerabaya.

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Tokyo Branch: No. 1 Eiraku-cho Ni-chome, Kojimachi-ku.

Telegraphic Address: "TAIWANGINK." Phone Nos. 5060, 5061, 5062, 5063, 5064, 5065, & 5066, Honkyoku.

Interest allowed on Fixed Deposits and Current Accounts on terms which may be ascertained on application. Most favourable terms are granted for Petty Current Accounts. Every description of Exchange and General Banking business transacted.

Special facilities for exchange business on China, Straits Settlements, East Indies, Australia, Great Britain, Russia, America, Canada, South Africa, etc.

K. YAMANARI, *General Manager.*

Hongkong and Shanghai Banking Corporation

Paid-up Capital	... ...		$15,000,000
Reserve Funds:	Sterling, £1,500,000 @ 2/- =	$15,000,000	
	Silver	21,000,000	
			$36,000,000
Reserve liability of Proprietors	... ...		$15,000,000

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W. L. PATTENDEN, Esq.
ROSS THOMSON, Esq.

Head Office:
HONGKONG

Chief Manager:
HONGKONG . . N. J. STABB

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LONDON COUNTY WESTMINSTER AND PARR'S BANK LTD.

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Sub-Agency: 9 Broadway

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COLOMBO	RANGOON
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ILOILO	SINGAPORE
IPOH	SOURABAYA
JOHORE	TIENTSIN
KOBE	TSINGTAO
KUALA LUMPUR	VLADIVOSTOCK
LONDON	YOKOHAMA
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Interest allowed on Current Accounts and on Fixed Deposits according to arrangement.

Local Bills Discounted. Credits granted on approved Securities and every description of Banking and Exchange business transacted. Drafts granted on London and the chief commercial places in Europe, India, Australia, Africa, China, Japan and America.

A. G. STEPHEN, *Manager.*

Banque Industrielle de Chine

CAPITAL............Francs 75,000,000, one-third of the Capital, i.e., Frs. 25,000,000, subscribed by

THE GOVERNMENT OF THE CHINESE REPUBLIC

Statutes approved by the Government of the Chinese Republic on January 11, 1913.

President: ANDRE BERTHELLOT.
General Manager: A. J. PERNOTTE.

HEAD OFFICE:
74 RUE ST. LAZARE, PARIS.

Branches in Peking, Tientsin, Shanghai, Hongkong, Canton, Foochow, Saigon, Haiphong and Yunanfou

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In France: Societe Generalle pour Favoriser le Development du Commerce et de l'Industrie en France.
In London: London City & Midland Bank Ltd.
In New York: Redmond & Co.
In Italy: Banca Commerciale Italiana Credito Italiano

Taels, Dollars, Gold Accounts

Interest allowed on Current Accounts in Gold or Local Currency and fixed deposits on application.

Every description of Banking and Exchange business transacted.

Savings accounts in Gold and Local Currency.

RUSSO-ASIATIC BANK

CAPITAL (fully paid)	Roubles	55,000,000
RESERVE FUND	"	26,960,000
Capital contributed by the Chinese Government ...	Kuping Tls.	3,500,000
Reserve Fund	"	1,750,000

Head Office: PETROGRAD
Paris Office: 9 RUE BOUDREAU
London Office: 64 OLD BROAD STREET, E.C. 2.

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LONDON: Messrs. Glyn, Mills, Currie & Co.
PARIS: Société Générale pour favoriser le développement du Commerce et de l'Industrie en France.
Banque de Paris et des Pays-Bas.
LYONS: Société Générale pour favoriser le développement du Commerce et de l'Industrie en France.
MILAN: Credito Italiano.

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CHANGCHUN (KWANCHENZE)	HONGKONG	TIENTSIN
CHEFOO	MANCHOULI	VLADIVOSTOCK
DAIREN (DALNY)	NEWCHWANG	YOKOHAMA
HAILAR	NICOLAYEWSK o/AMUR	
HANKOW	PEKING	

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Shanghai Branch:

Interest allowed on Current Accounts and Fixed Deposits in Taels, Dollars and Roubles. Terms on application.
Local Bills discounted. Special facilities for Russian Exchange.
Foreign Exchange on the principal cities of the world bought and sold.

SAFE DEPOSIT BOXES.

L. JEZIERSKI, G. CARRÈRE, *Managers for Asia.*

BANK OF COMMUNICATIONS

(Specially authorised by Presidential Mandates of April 7th, 1914 and October 31st, 1915 making the Bank of Communications a National Bank).

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CAPITAL . . Kuping Tls. 10,000,000

President: TSAO JOU LIN

Vice-President: JEN FUNG PAO

Every description of Banking and Exchange business transacted.
Interest allowed on Current Accounts and Fixed Deposits according to arrangement.
Credits granted on approved Securities.
Special Facilities for Transfers to all parts of China.

Branches

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SHANTUNG PROVINCE.—Tsinanfu, Tsininchow, Chefoo, Techow, Tsaochwang, Lungkow.

HONAN PROVINCE.—Kaifeng, Lohyang, Chengchow, Chiaotso, Chowchiakow, Taokow, Leiho, Hsinhsiang, Changtefu, Hsinyangchow.

SHANSI PROVINCE.—Shihchiachwang, Tatungfu, Fengcheng, Yangkao.

KIANGSU PROVINCE.—Shanghai, Soochow, Wusieh, Chinkiang, Yangchow, Tsing-kiangpu, Pukow, Penpu, Hsuchow.

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HUPEH PROVINCE.—Hankow, Shasi, Ichang.

KIANGSI PROVINCE.—Kiukiang.

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SZECHUAN PROVINCE.—Chungking.

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KWANGTUNG PROVINCE.—Canton.

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ABROAD.—Hongkong, Singapore.

The Yokohama Specie Bank, Limited

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Vice-President:
S. K. SUZUKI, Esq.

Directors:
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S. K. Suzuki, Esq.
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M. Mitsui, Esq.
K. Morimura, Esq.
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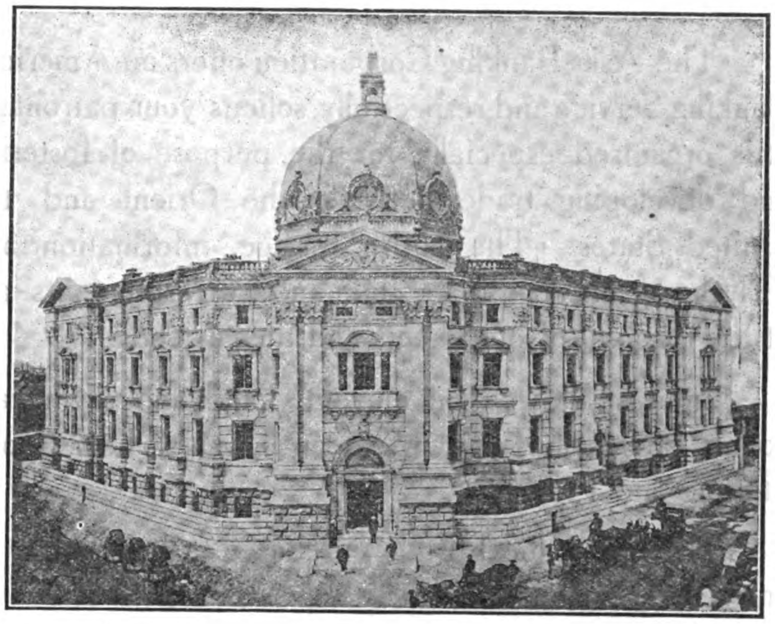

General Manager:
S. K. Suzuki, Esq.

HEAD OFFICE, YOKOHAMA

Manager:
Taro Hodsumi, Esq.

SHANGHAI BRANCH

31 The Bund.

Director and Manager:
K. Kodama, Esq.

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Bombay
Buenos Aires
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Chinan Fu
Dairen
Fengtien
Hankow
Harbin
Hongkong
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Kaiyuang
Kobe
London
Los Angeles (sub-office of San Francisco Branch)
Lyons
Manila
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Newchwang
New York
Osaka
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Rangoon
Rio de Janeiro
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Sydney
Tientsin
Tsingtau
Tsinan
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Correspondents at all the Chief Commercial Cities in the World.

LONDON BANKERS:

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LONDON PROVINCIAL & UNION BANK OF ENGLAND LTD.
LONDON JOINT STOCK BANK LTD.

Interest allowed on Current Accounts and Fixed Deposits on terms to be ascertained on application.
Every description of Banking business transacted. For particulars, apply to the Managers.

Asia Banking Corporation

An American Bank

The Asia Banking Corporation offers an American Banking Service and respectfully solicits your patronage. It is organised especially for the purpose of fostering and developing trade between the Orient and the United States. The entire service, information and TIME of our bank, its staff and correspondents are at the disposal of our clients and their friends.

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Foreign or local drafts purchased at best rates, or entered for collection.

Imports and exports financed.

Drafts sold on, and telegraphic payment effected in, any part of the World.

Head Office: New York City

Head Office for Far East: Shanghai

Other Branch Offices at Canton, Changsha, Hankow, Hongkong, Manila, Peking, Tientsin.

PARK-UNION

FOREIGN BANKING CORPORATION

HEAD OFFICE: 56 Wall Street, New York

Fully Paid Capital and Surplus $2,250,000

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Sir Wm. Price	T. Fred Aspden

Charles A. Holder, *President*

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PARIS TOKYO YOKOHAMA

Shanghai Branch:

No. 1 KIUKIANG ROAD

Telephone Central 1174

THE ROYAL BANK OF CANADA

HEAD OFFICE, MONTREAL.

LONDON, ENG. Princes Street, E.C.

NEW YORK. 68, William Street.

BARCELONA. Plaza de Cataluna 6.

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Drafts sold. Trade Enquiries effected.

533 BRANCHES IN CANADA & NEWFOUNDLAND, ALSO

67 FOREIGN BRANCHES.

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DOMINICAN REPUBLIC—S. Domingo, Puerto Plata, Sanchez, S. Pedro de Macoris and Santiago de los Caballeros. **MARTINIQUE**—Fort de France.

GUADELOUPE—Pointe-à-Pitre and Basse Terre.

VENEZUELA—Caracas, Ciudad Bolivar, Maracaibo and Puerto Cabello

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Antigua—St. John's.	**Montserrat**—Plymouth.
Bahamas—Nassau.	**Nevis**—Charlestown.
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Dominica—Roseau.	**Tobago**—Scarborough.
Grenada—St. George's.	**Trinidad**—Port of Spain and San Fernando.
Jamaica—Kingston.	

BRITISH GUIANA—Georgetown, New Amsterdam and Rose Hall (Corentyne).

BRITISH HONDURAS—Belize.

Affiliated in France:

THE ROYAL BANK OF CANADA (FRANCE), 28, Rue du Quatre-Septembre, PARIS.

Correspondents in Canada and West Indies for the HONG KONG AND SHANGHAI BANKING CORPORATION.

Capital Paid up and Reserves - $33,000,000.

Total Resources - - - - - $470,000,000.

THE BANK OF EAST ASIA, LTD.

HEAD OFFICE: HONGKONG (2 Queen's Road Central).

Paid-up Capital - $2,000,000.00

DIRECTORS: 董事局

Pong Wai Ting, *Chairman.* 龐偉廷

Chow Shou Son	周壽臣	Mok Ching Kong	莫晴江
Kan Ying Po	簡英甫	Chan Ching Shek	陳澄石
Li Koon Chun	李冠春	Wong Yun Tong	黃潤棠
Chan Kai Ming	陳啓明	Fung Ping Shan	馮平山
Ng Chang Luk	吳增祿	P. K. Kwok	郭幼廷

Kan Tong Po, *Chief Manager.* 簡東浦

Li Tse Fong, *Asst. Manager.* 李子方

A Bank of Character, Strength, Efficiency & Service.

We offer every facility consistent with sound Banking.

Interest allowed on Current Account at 2 per cent. per annum, and on Fixed Deposits at the following rates:—

For 3 months @ 3% per annum
" 6 " 4% "
" 12 " 5% "

KAN TONG PO, *Chief Manager.*

GASTON, WILLIAMS & WIGMORE,

FAR EASTERN DIVISION, INC.,

Cable Address **SHANGHAI** **Gastonorge**

IMPORTERS EXPORTERS ENGINEERS CONTRACTORS

Head Office: 39 BROADWAY, NEW YORK

AMERICAN HOIST & DERRICK CO. Builders Hoists, Elevators and Derricks, Railroad Ditchers and Railroad Construction Equipment.	BOWERS RUBBER WORKS. Belting, Packing, Steam Hose, Mill Hose, etc.
BRADFORD BELTING CO. Leather Belting.	H. BRINTON COMPANY Superior Knitting Machinery.
LANSTON MONOTYPE CORP. Type Composing, Type Casting and Lead, and Rule Casting Machine.	NORTH-WESTERN EXPANDED METAL CO. Expanded metal for reinforced concrete construction.
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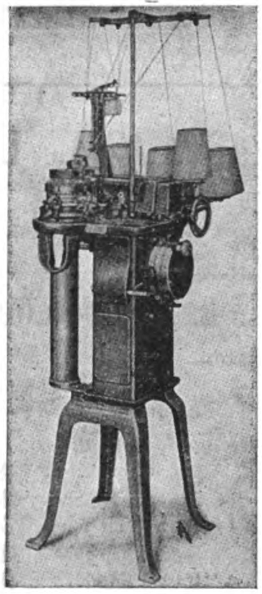
And a long list of other equally prominent manufacturers whose products are required in the Industrial Development of China.



HOSIERY AND UNDERWEAR MANUFACTURERS

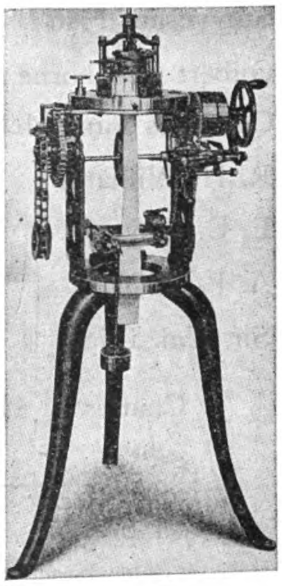
are invited to inspect our exhibit of

BRINTON AUTOMATIC SEAMLESS KNITTING MACHINES

SPECIAL FEATURES

Socks manufactured with our machinery have REAL RIBBED TOPS, EXCLUSIVE FRENCH WELT, TIGHT ANKLE, HIGH SPLICE, DOUBLE SOLE and PERFECT PLATING.

More production than any other machine making the same style of goods.



American needles and spares always carried in stock. Instructions given. Inquiries solicited.

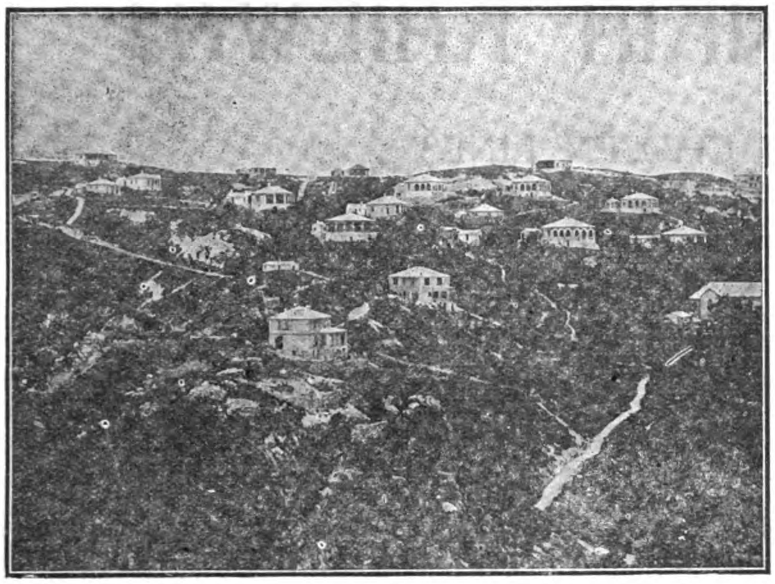
GASTON, WILLIAMS & WIGMORE, ELECTRICAL ENGINEERING CORPORATION

China Agents for

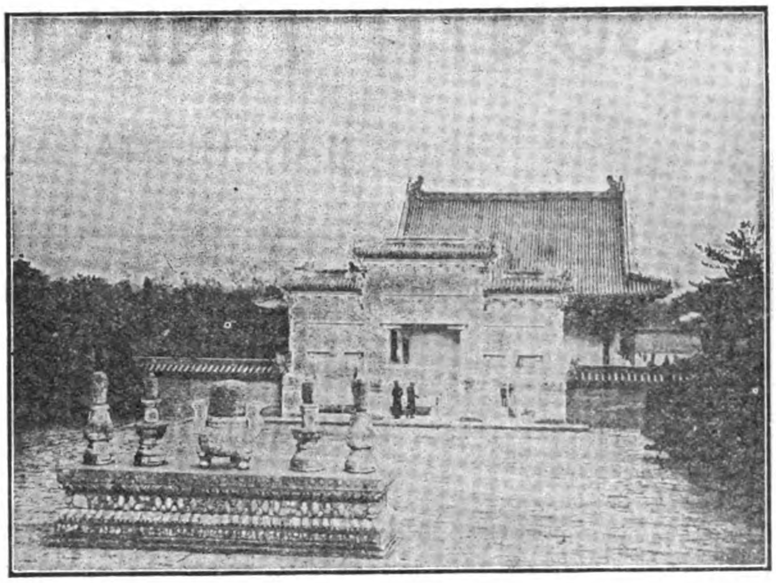
WESTINGHOUSE ELECTRIC EXPORT COMPANY

Complete Electrical and Steam Equipments for all purposes. "The name Westinghouse is a Guarantee."

CHINESE GOVERNMENT RAILWAYS



SUMMER RESORT AT CHI KUNG SHAN



TOMB OF EMPEROR YU CHENG NEAR LIANG KOW CHWANG

PEKING-HANKOW LINE

"The Road Through The Heart of China"

THE Peking-Hankow Line, the most important section of China's overland route, enables tourists and travellers to get a glimpse of Old China, the train passing through magnificent scenery, traversing the great plains of Chihli, the central portion of Honan and the mountainous regions of the eastern Hupeh province.

The Peking-Hankow route joins at Fengtai the main line of the Peking-Mukden Railway, by means of which this line is connected with the railways in Manchuria, Korea, Japan, and Siberia, while steamer facilities at Hankow bring it into easy communications with the Yangtze River ports and Shanghai.

From the Capital to Hankow the journey occupies 34 hours, by the daily through train which is provided with up-to-date sleeping and dining accommodations.

Chikungshan Mountain (Summer Resort).—Not many Summer Resorts in China inland, can bear comparison with the natural charming views, that reward those who ascend the mountain of Chikungshan, whose summit stands at an altitude of 1,980 ft. On reaching Sintien station, situated 110 miles from Hankow, a serpentine road climbs the mountain, on top of which are hundreds of beautiful bungalows awaiting vacationists. This popular resort is celebrated for its scenery, where an almost unbroken communion with nature can be enjoyed for a week at a time.

Hsi-ling or Western Imperial Tombs.—With their present-day accessibility, there is now little excuse for visitors to Peking omitting a trip to the Western Imperial Tombs, undoubtedly one of the most impressive sights in China. The site of these beautifully adorned Imperial Tombs is close to Liang Ko Chwang station, 79 miles from Peking, which is reached by a Branch-line, formerly built for the exclusive use of the Imperial Sovereigns when visiting the Tombs of their ancestors. The Western Tombs include the mausoleums of four Manchu Emperors and three Empresses, as well as those of a number of Princesses. The region, as a well laid-out park, closely wooded, is justly appreciated for the charming scenery surrounding the Imperial Tombs and is highly recommended to any one in search of the extraordinary and beautiful.

For Particulars, Pamphlets, Tickets, etc., apply to the "Information Bureau" at Peking Head Office or to Tourist Agencies.

SOUTH MANCHURIA RAILWAY

MANCHURIA AND CHOSEN LINES

Circular and Overland Trips at Greatly Reduced Rates

TOURIST TRAVEL OFF THE BEATEN TRACK

Tourists in the Far East should not miss Manchuria. Through Japan, Chosen (Korea), and Manchuria (or vice versâ) is an ideal trip, combining the distinctive characteristics of three unique and profoundly interesting countries.

The Chosen and Manchuria Lines are under the management of the South Manchuria Railway Company. Express trains have been temporarily suspended (except between Fusan and Seoul), but the Ordinary Trains are equal to most American Trains, run at least three times a day from each end, and to some of them Sleeping and Dining Cars are attached. Sleeping berths should be reserved in advance.

Hotels under the Company's management are established on foreign lines at SEOUL (capital of Chosen), FUSAN and SHINGISHU (the two extremities of Chosen), KONGOSAN (the famous Diamond Mountain of Korea, rivalling Switzerland in scenery), MUKDEN (ancient capital of China, home of the Manchuria Dynasty, noted for Imperial Palaces and Tombs), CHANGCHUN (junction for three railways and "key to Manchuria"), PORT ARTHUR (of world-wide fame for its historic sieges and ruined forts), DAIREN (one of the greatest commercial cities in the Orient), and HOSHIGAURA (the finest seaside resort in North China).

From Dairen there are frequent and regular steamers to and from Shanghai, Tsingtao, Tientsin, etc.

For pictorial guide-books, pamphlets, and further particulars, apply to the Tourist and Ticket Agencies, or direct to the

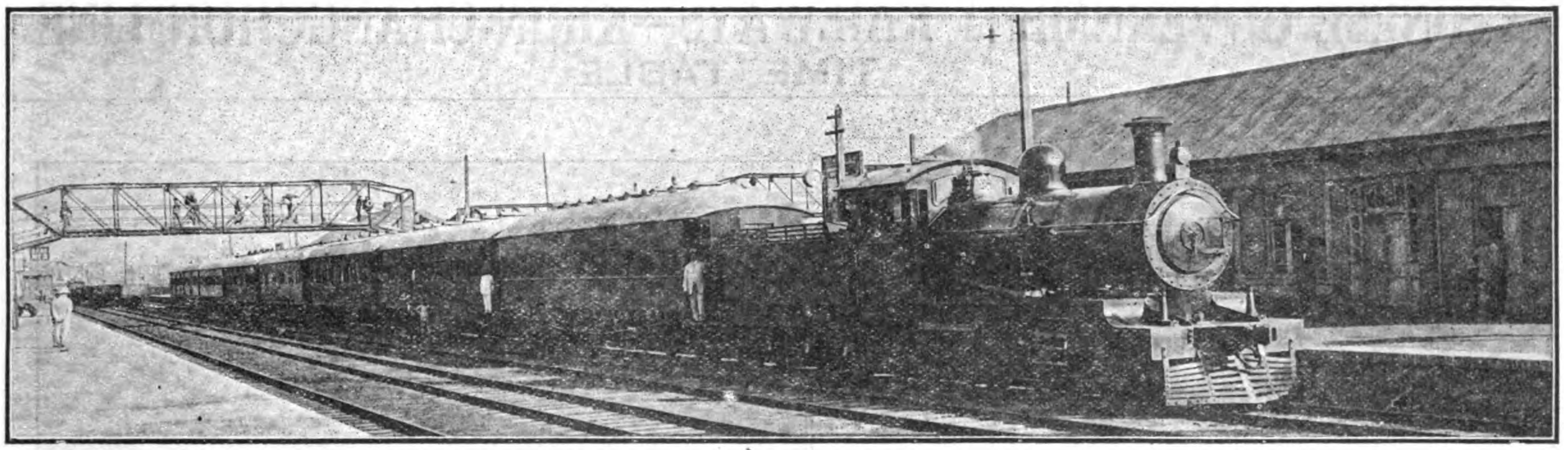
SOUTH MANCHURIA RAILWAY COMPANY

Head Office: DAIREN

Branch Offices: TOKYO, SEOUL, HARBIN, KIRIN, PEKING, AND SHANGHAI

Telegraphic Address: MANTETSU. Codes: A.B.C. 5th Edition, and Lieber's

CHINESE GOVERNMENT RAILWAYS



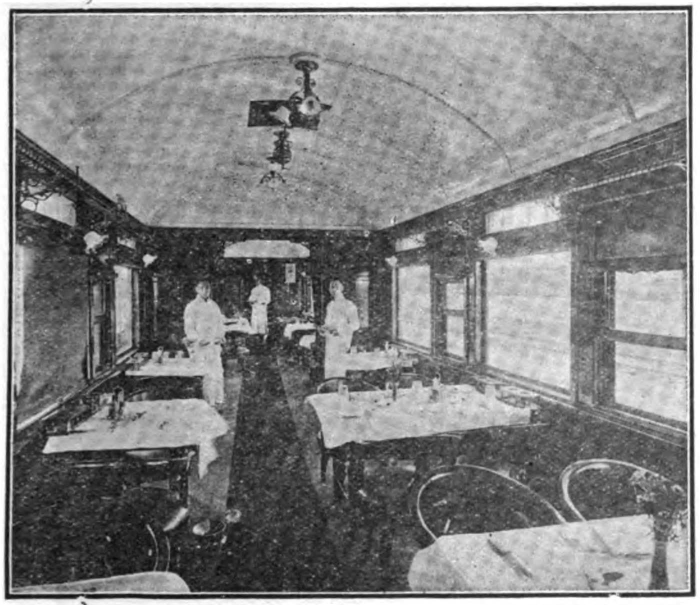
TRAIN DE LUXE AT TIENTSIN EAST STATION

The Peking-Mukden Line

Through service from Peking to Mukden, connecting at Mukden with the South Manchuria Express from Trans-Siberian Route. At Peking connection is made with the Peking-Hankow Railway for Hankow and Yangtze Ports, and Intermediate Points reached by the Chen-Tai Line to Taiyuanfu, the Tao-Ching Line, and the Pienlo Railway to Kaifengfu and Honanfu. Connection is also made at Peking with the picturesque Kalgan Line, "The road to the Great Wall." At Tientsin (Central) connection is also made with the Tientsin-Pukow line for Tsinanfu and Shanghai.

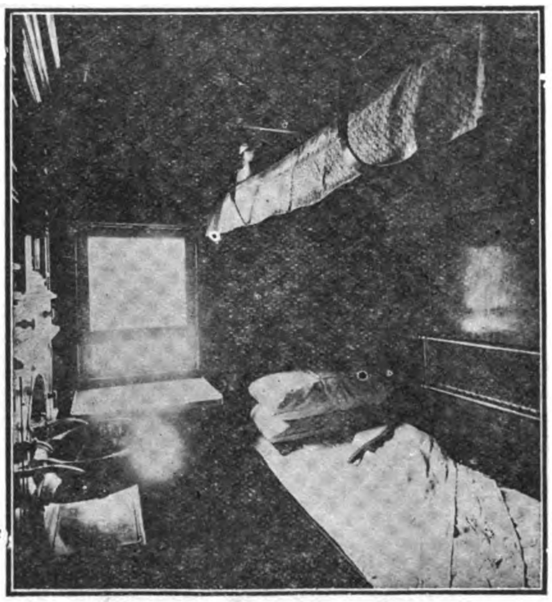
THE RAILWAYS OF NORTH CHINA PASS THROUGH THE MOST INTERESTING PART OF CHINA

PEKING.—The Capital, with the Walls, Palaces, Temples and Tombs.—**TIENTSIN.**—The Great Trade Centre of North China.—**TONGSHAN.**—The Largest Mining and Industrial Town in the Country.—**SHANHAIKWAN.**—Where the Great Wall ends at the sea.—**NEWCHWANG.**—The Busy Commercial Port of Manchuria.—**MUKDEN.**—The Ancestral home of the Manchu Dynasty. A Miniature Peking, with its Walls, Imperial Palaces, Temples and Tombs.



DINING CAR ON TRAIN DE LUXE

The through trains are equipped with Buffet and Dining Car Service. A Comfortable, Modern Train De Luxe of Compartment Sleeping Coaches is operated in connection with the through service of the Trans-Siberian and South Manchurian Railways.



FIRST CLASS SLEEPING BERTH, TRAIN DE LUXE

Through tickets to London and other places in Europe can be obtained at Peking and Tientsin from which stations passengers' luggage can be registered through to destination. Through tickets are issued and passengers' baggage registered through between the important Stations on the Peking-Mukden Railway and the South Manchuria Railway, Chosen (Korean) Railway and Imperial Government Railways of Japan.

For information regarding the many places of interest in China, Tourists will find "The Travellers' Handbook for China" with maps most useful. It is obtainable at any of the offices of Thos. Cook & Sons. The Chinese Government Railways Time Table book with Railway map can be had at any of the offices of Thos. Cook & Sons, and the International Sleeping Car Co., Hotels, Clubs and at all important Stations. Full particulars on application to any of the Stations or to the Traffic Manager of any of the Railways mentioned and on application to any office in America, Europe or the Far East of The Cie. International des Wagons-Lits, Thos. Cook & Sons, or

TRAFFIC MANAGER, CHINESE GOVERNMENT RAILWAYS (PEKING-MUKDEN), TIENTSIN.

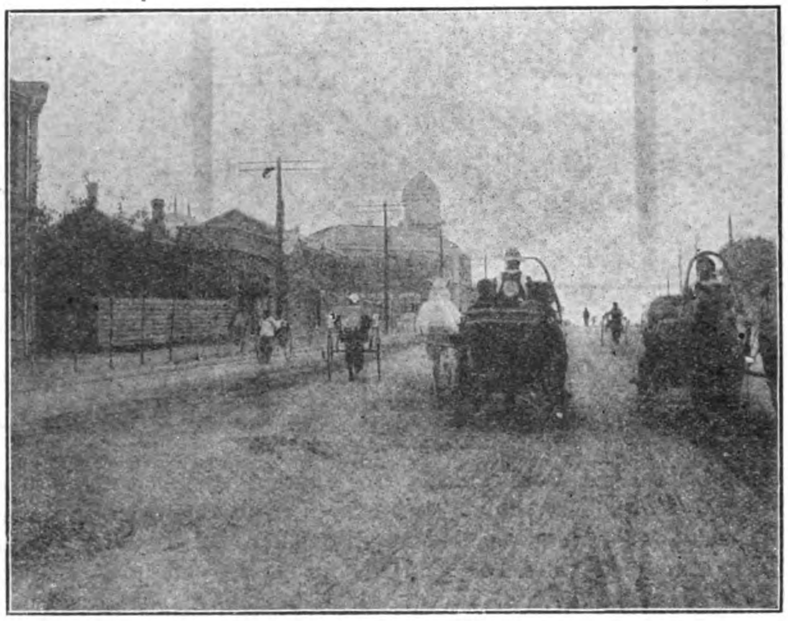
中華民國政府吉長鐵路行車時刻表

CHINESE GOVERNMENT RAILWAYS—KIRIN-CHANGCHUN LINE

TIME TABLE

DOWN TRAINS		STATIONS	UP TRAINS	
DAILY			DAILY	
MIXED	MAIL		MAIL	MIXED
P.M. 1.20	A.M. 8.30 d.	TOUTAOKOU	P.M. a. 6.00	A.M. 11.10
1.30 1.39	8.40 a. 8.42 d.	2.79 CHANGCHUN	d. 5.50 a. 5.45	11.00 10.56
2.14 2.19	9.12 a. 9.14 d.	12.69 KALUN	d. 5.15 a. 5.13	10.22 10.19
2.49 2.51	9.44 a. 9.45 d.	11.13 YINMAHO	d. 4.43 a. 4.42	9.46 9.40
3.07 3.09	9.58 a. 10.00 d.	5.38 HSIACHIUTAI	d. 4.29 a. 4.27	9.25 9.20
3.22 3.24	10.12 a. 10.13 d.	4.58 YINGCHENGTZE	d. 4.14 a. 4.13	9.07 9.05
3.51 3.55	10.35 a. 10.43 d.	9.14 TUMENLING	d. 3.53 a. 3.48	8.42 8.37
4.42 4.46	11.22 a. 11.24 d.	9.26 HUAPICHANG	d. 3.08 a. 3.06	7.51 7.47
5.07 5.08	11.37 a. 11.38 d.	6.46 KUTIENTZE	d. 2.52 a. 2.51	7.30 7.28
5.27 5.32	11.53 a. 11.55 d.	6.83 KIUCHAN	d. 2.37 a. 2.35	7.11 7.07
5.58	12.15 a.	8.30 KIRIN	d. 2.15	6.45

NOTICE:—"d" = Departure. "a" = Arrival. 25th November, 1917

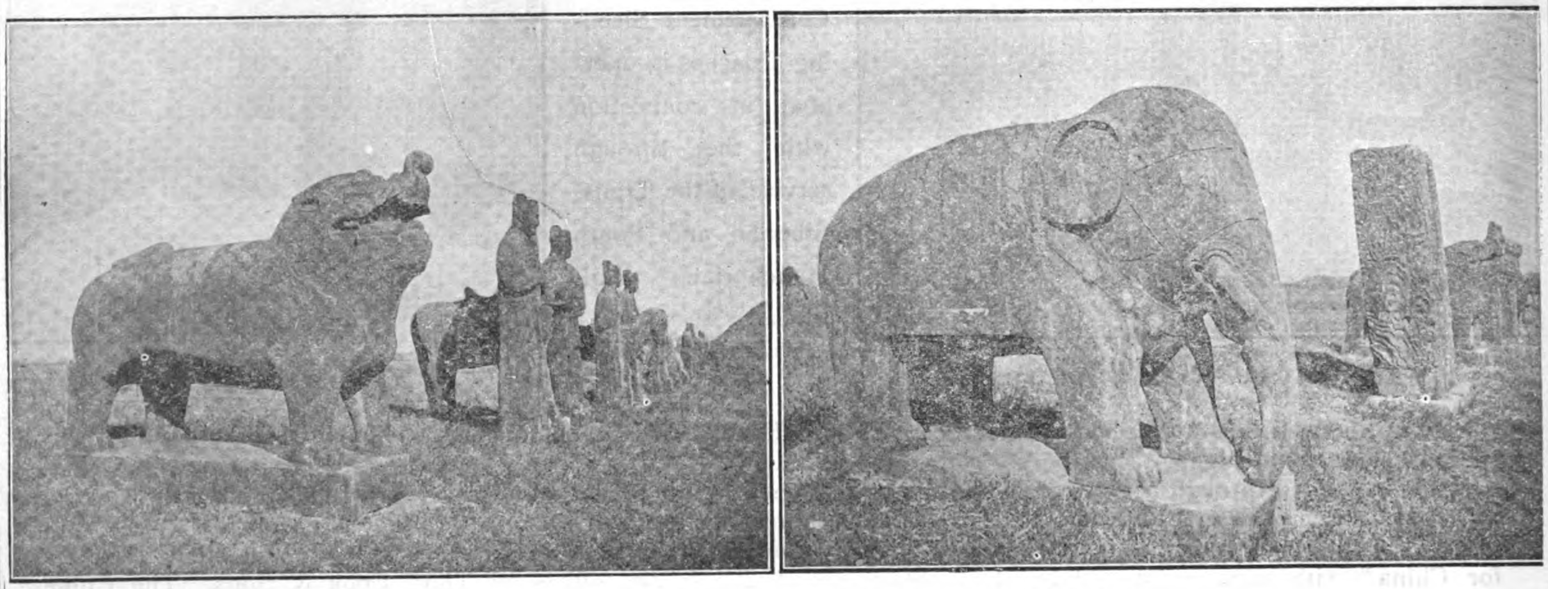


STREET SCENE, CHANGCHUN.

THE PIENLO RAILWAY

(Kaifeng-fu to Honanfu)

"THE FIRST SECTION OF THE PROJECTED CENTRAL TRUNKLINE"

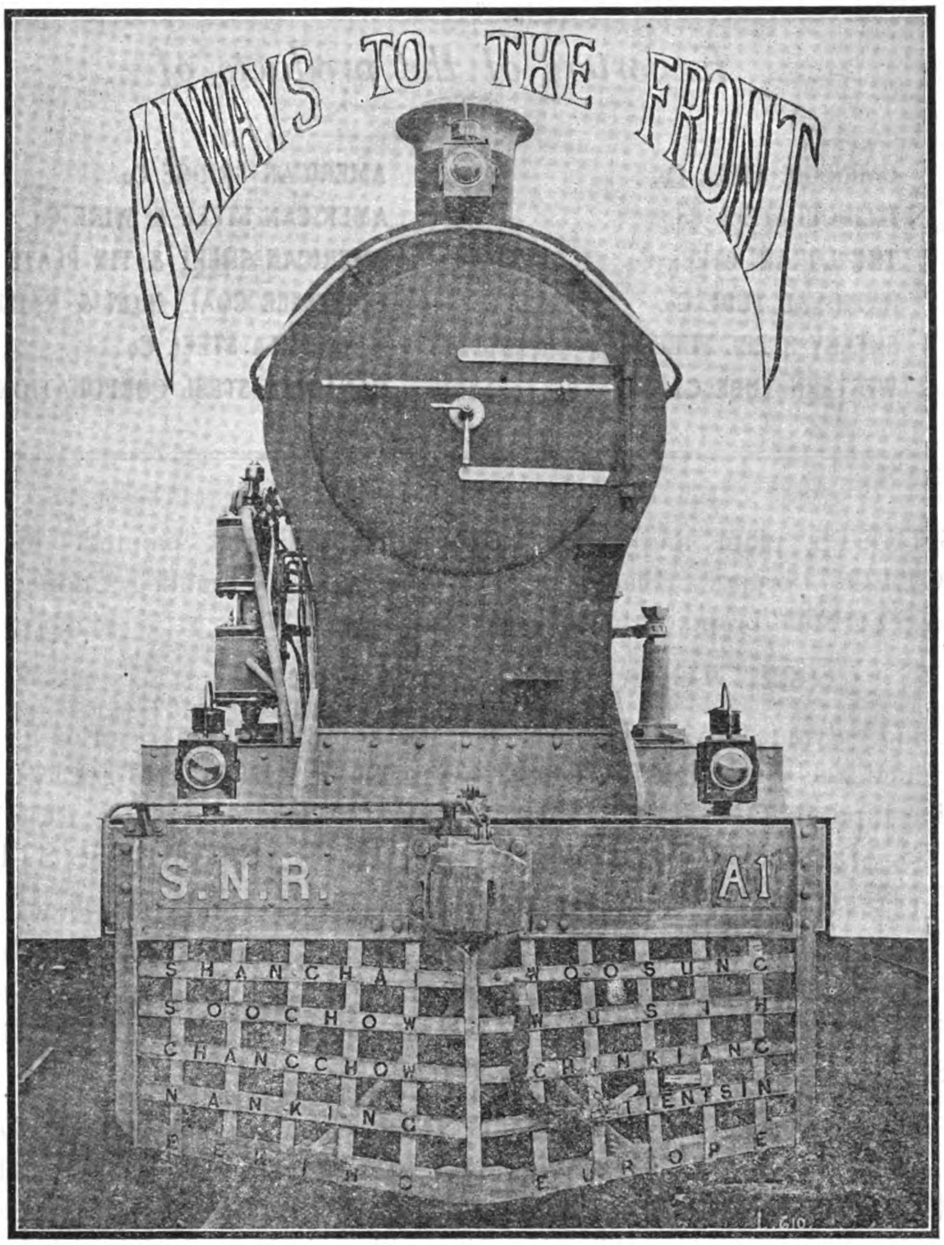


THE SUNG TOMBS NEAR KAIFENG-FU ON THE PIENLO RAILWAY.

The line connects with the through service of the Peking-Hankow Railway at Tcheng Tchéou, enabling the traveller to visit Kaifengfu, the provincial capital of Honan, and the old capital of the Empire at Honanfu.

CHINESE GOVERNMENT RAILWAYS

SHANGHAI-NANKING RAILWAY



ACCELERATED SERVICE BETWEEN SHANGHAI AND PEKING

Express and Fast Trains run daily between Shanghai North, Soochow, Wusih, Changchow, Tanyang, Chinkiang and Nanking, to which places weekend tickets, at reduced rates, are issued.

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For further information apply to THE TRAFFIC MANAGER, SHANGHAI NORTH STATION,

TELEPHONE No. 900

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STEEL SHEETS, plain and corrugated; galvanized and painted. Galvanized sheets "APOLLO" brand. Black sheets "EAGLE" brand. Copper bearing sheets "KEYSTONE" brand, either black or galvanized.

TIN PLATE, "COKE," "CHARCOAL" and "TERNE."

PIPE, black and galvanized wrought, for steam, gas and water; American or English Standards. Lapwelded steel BOILER TUBES. CASING, TUBING and DRIVE PIPE. Oil and Gas line Pipe. CONVERSE and MATHESON lead joint pipe. TUBULAR STEEL POLES. Lapwelded and seamless CYLINDERS. SEAMLESS STEEL TUBING.

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STRUCTURAL MATERIAL of all kinds; Joists, Channels, Tees, Angles, etc., for Bridges, Buildings and General Constructive work. Best quality BESSEMER and BASIC OPEN HEARTH STEEL BARS, Rounds, Squares, Flats, Ovals and Hexagons. Special bolt, rivet and shafting steel. STEEL SHEET PILING, STEEL MINE TIMBERS, OIL WELL DERRICKS, SCHOEN SOLID FORGED AND ROLLED STEEL WHEELS. VANADIUM STEEL, GEAR BLANKS.

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GENOA
GLASGOW
HAVANA
JOHANNESBURG
LIMA
LONDON
MEXICO CITY
MONTREAL
NEW GLASGOW
PARIS
PETROGRAD
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MILD STEEL PLATES for ships' tanks, stacks and boilers. Flange and fire-box steel. Checkered plates.

WIRES, baling and fencing; all classes of coated and uncoated for manufacturing purposes. Genuine "IOWA," "GLIDDEN" and "WAUKEGAN" barb wire. Fence and netting STAPLES. Tinned mattress, broom and bottling wire. Woven Wire Fence. FABRIC FOR REINFORCING CONCRETE. Wire Nails and Tacks of all descriptions

INDESTRUCTIBLE CYLINDRICAL STEEL FENCE POSTS.

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WEATHER PROOF INSULATED telephone and signal WIRE. Galvanized telegraph and telephone wire.

ROUND and FLAT WIRE STEEL SPRINGS. PIG IRON, COAL and COKE.

FABRICATED MATERIAL for railway bridges, highway bridges, turntables, transfer tables, barges, steel chimneys, steel buildings, mill buildings, office buildings, tanks, towers, transmission towers, trestles, cylinder piers.

desired, with full particulars as to size, weight, finish, packing, etc. Special catalogue on application.

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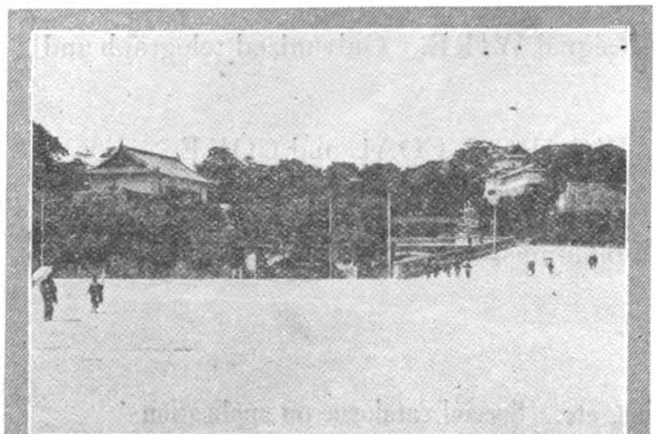
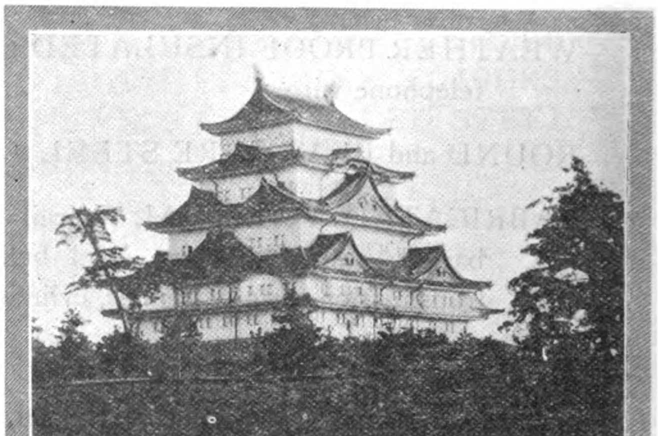


NIJUBASHI (TWIN BRIDGES). THE MAIN APPROACH TO THE IMPERIAL PALACE, TOKYO



NAGOYA CASTLE, BUILT IN 1611, NOTED FOR ITS COPPER-BRONZE ROOFS CROWNED BY GOLD DOLPHINS

THROUGH BOOKING TO AND FROM

CHINA

Single and Return Tickets between China and Japan via Chosen

Period of Validity : Single, 40 days: Return, 110 days. 20% Reduction for Return Tickets

China-Japan Party Trip Tickets

Period of Validity: Two months. Reduction : 25%-50% for 10 or more passengers

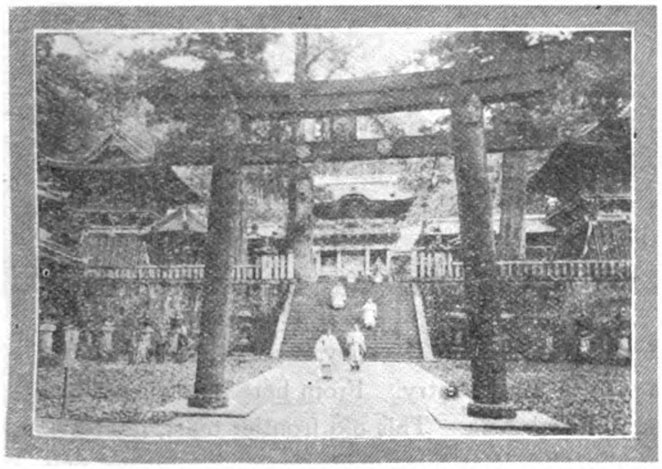
China-Japan Circular Tour Tickets

Period of Validity : Four months. Reduction : 30% for Railway ; 25% for Steamer

China-Japan Parcel Through Traffic

Parcel through conveyance between the principal stations in China and Japan viâ Chosen at low rates

FOR PARTICULARS, TIME-TABLES, MAPS, ETC., PLEASE APPLY TO
TRAFFIC DEPARTMENT, IMPERIAL GOVERNMENT RAILWAYS,
TOKYO



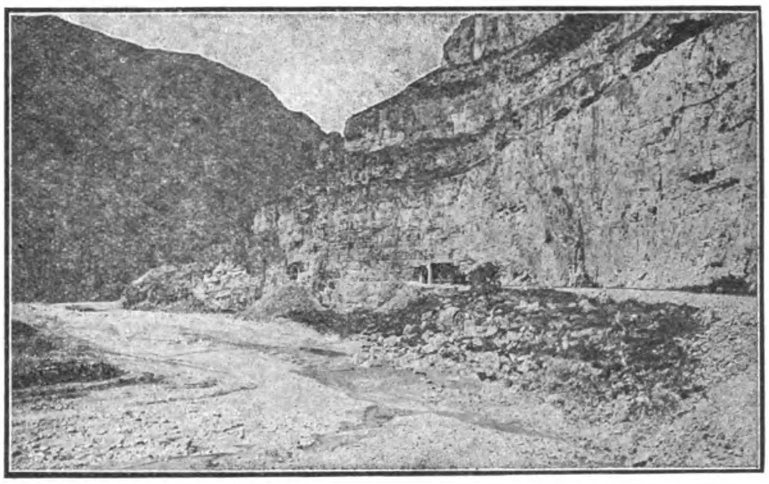
NIKKO SHRINE, THE ARCHITECTURAL GLORY OF WHICH IS WELL KNOWN ALL OVER THE WORLD

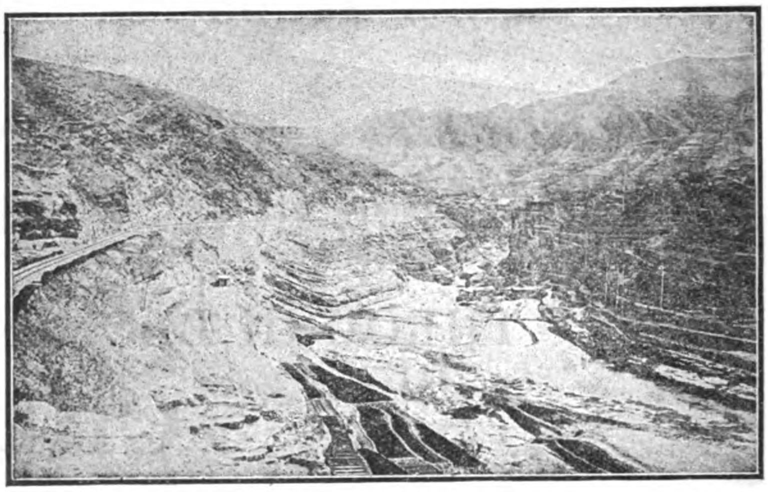
KIYOMIZU TEMPLE, COMMANDING A BIRD'S-EYE VIEW OF KYOTO

CHINESE GOVERNMENT RAILWAYS

CHENG-TAI RAILWAY

(Chinese Government Shansi Line—Chengtingfu to Taiyuanfu)



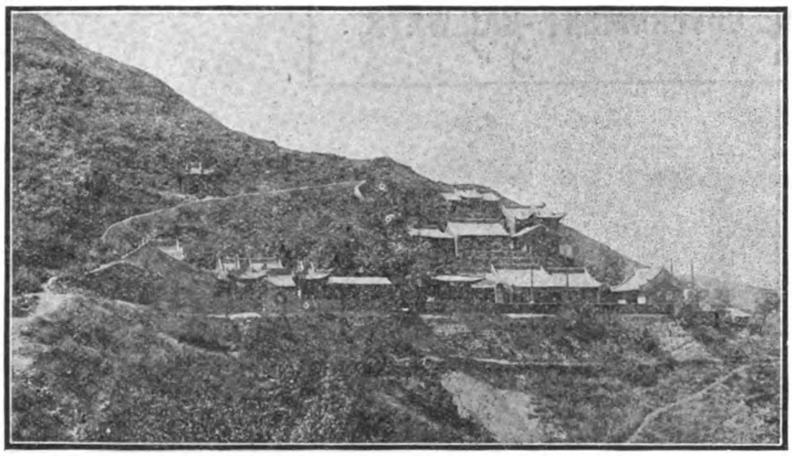


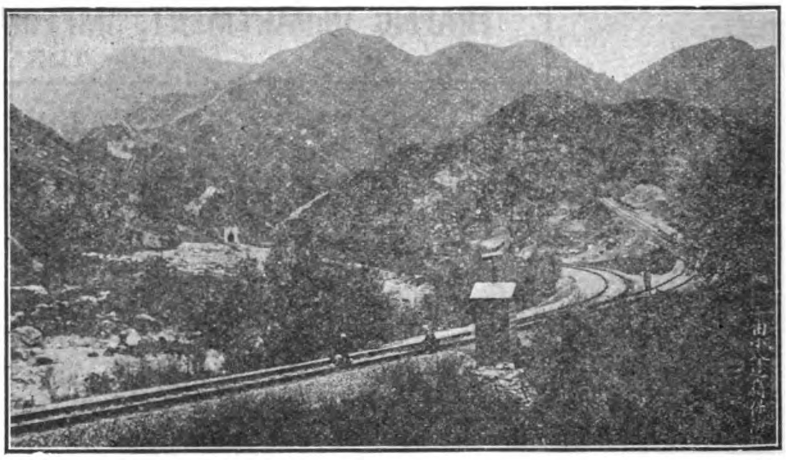
VIEWS ALONG ROUTE OF CHENG-TAI RAILWAY

The trains of this line connect with the through service of the Peking-Hankow Railway, affording Travellers the opportunity of seeing the most picturesque part of China. The line passes through a mountainous section of country, rich in Mineral Resources to the Provincial Capital of Shansi at Taiyuanfu. This interesting city is a great educational centre, and famous for the fine quality of its artistic embroideries.

PEKING-SUIYUAN LINE

"The Road to the Great Wall"

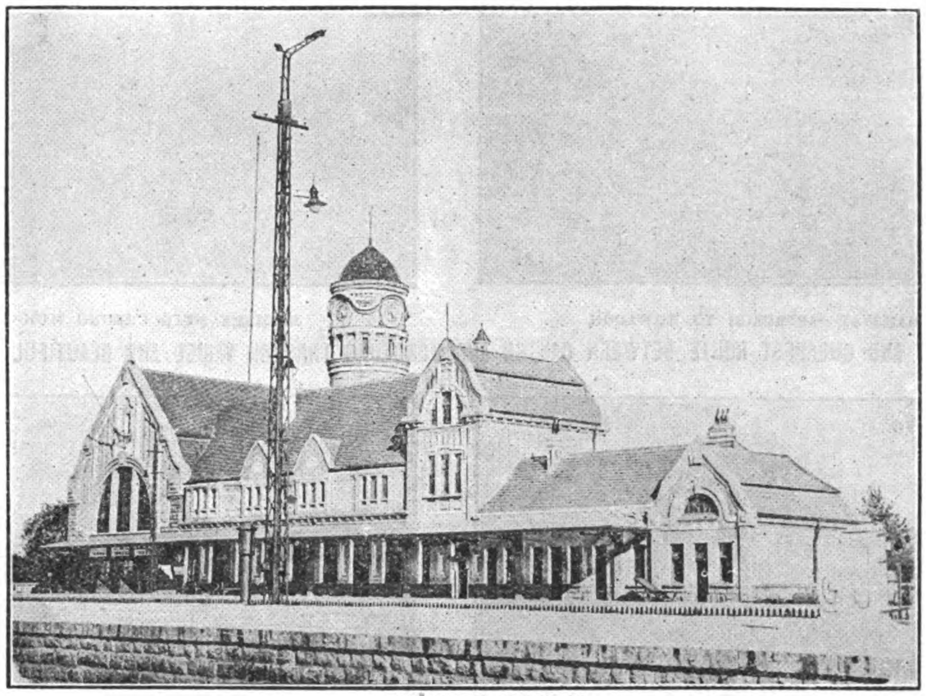




This line follows the ancient caravan route and military highway from Mongolia into China by the way of the historic Nankow Pass. This pass is the Key to Peking, and Kalgan is the gate of the Country. From here the great camel caravans set out on their long journeys across Mongolia to Siberia and Central Asia. This old frontier mart, retaining its time-honored characteristics, one of the most interesting sights of the Old World, is made accessible by the new railway. The line also carries the passenger in two hours from Peking to Nankow, when the Great Wall of China and the Ming Tombs may be seen. A foreign hotel is operated by the railway authorities at Nankow, where chairs and guides may be secured for the Tombs.

CHINESE GOVERNMENT RAILWAYS.

TIENTSIN-PUKOW LINE.



TSINANFU STATION.

THE above-named line, with its SOUTHERN end at PUKOW and NORTHERN end at TIENTSIN is having its through mail trains equipped with SLEEPING and BUFFET CARS running both ways every day. Comfortable seats and best meals are supplied on the trains. SANITARY ARRANGEMENTS are kept in perfect order and condition. A ferry steamer of modern type is provided for the conveyance of passengers across the river BETWEEN NANKING and PUKOW. Along this line travellers are afforded the opportunity of seeing the views of the country and many places of historic antiquities that will serve interest to the travelling observers. The time for the running of the trains are so scheduled as to make them CONNECT WITH the trains of the SHANGHAI-NANKING LINE on the southern terminus and those of the PEKING-MUKDEN LINE at the northern end. Travellers who intend to go to PEKING, KALGAN, TATUNG, MUKDEN, SOUTH MANCHURIA and SIBERIA or VICE VERSA are enabled to effect their journeys of a great distance at a very short space of time, it being considered the SAFEST and QUICKEST route for the travelling public.

For further particulars, please apply to:

THE HEAD OFFICE OF THE RAILWAY, TIENTSIN, the Agencies of Messrs. THOMAS COOK AND SON, the INTERNATIONAL SLEEPING CAR AND EXPRESS TRAINS COMPANY or the NORDISK RESEBUREAU.

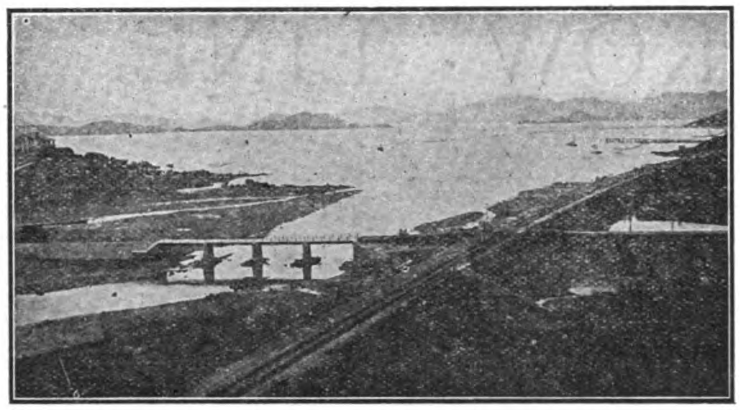
Telegraphic Address: "TSINPURY" TIENTSIN. **Codes: A.B.C. 5th Edition.**

津浦路綫南達浦口北至天津每日均有快車往來並附掛臥車餐車食品精潔座次安舒關於衛生各事皆極講求於南京口間近添設新式渡輪迎送旅客尤稱便利沿途風景名勝之區古蹟極多足饜游觀者之心目且行車時刻南與滬甯北與京奉均相聯接凡欲至北京張家口大同及奉天南滿西伯利亞等處往來均可尅期而至行旅視爲坦途萬里達於旦夕有志游歷者所樂於取道也如有詢問事項天津津浦鐵路管理局或通濟隆洋行萬國臥車公司北方游歷公司等經理處均可通函

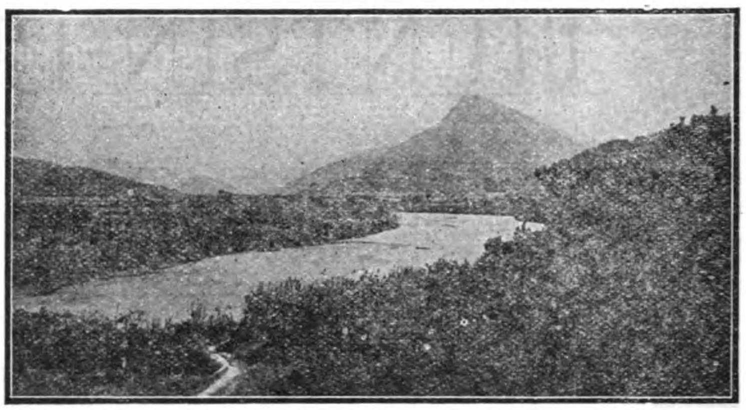
CANTON-KOWLOON RAILWAY

VIEWS ON THE BRITISH SECTION (22 MILES)

VIEWS ON THE CHINESE SECTION, 89 MILES (Chinese Government Railways)

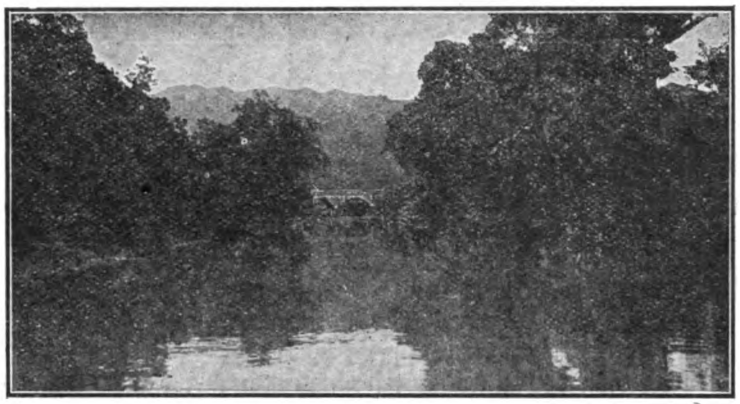


CANTON-KOWLOON RAILWAY—APPROACH TO KOWLOON

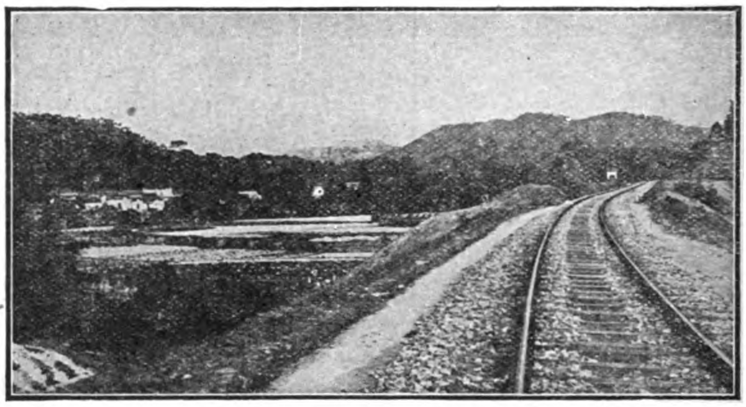


SCENERY NEAR CHEUNG MUK TOW—C. K. RAILWAY

QUICKEST AND CHEAPEST ROUTE BETWEEN CANTON AND HONGKONG THROUGH VARIED AND BEAUTIFUL SCENERY

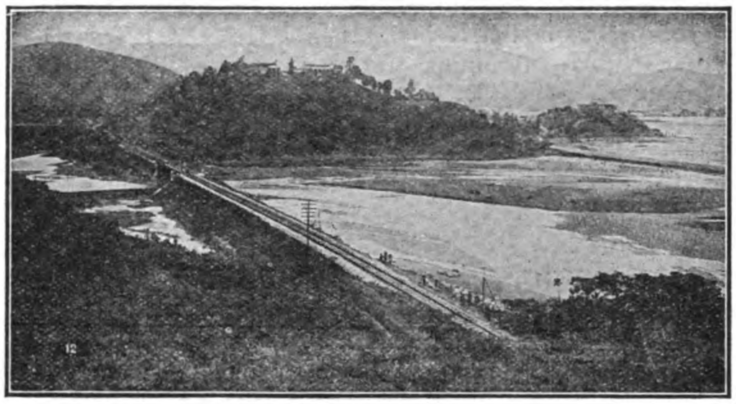


CANTON-KOWLOON RAILWAY—SCENE ALONG ROUTE

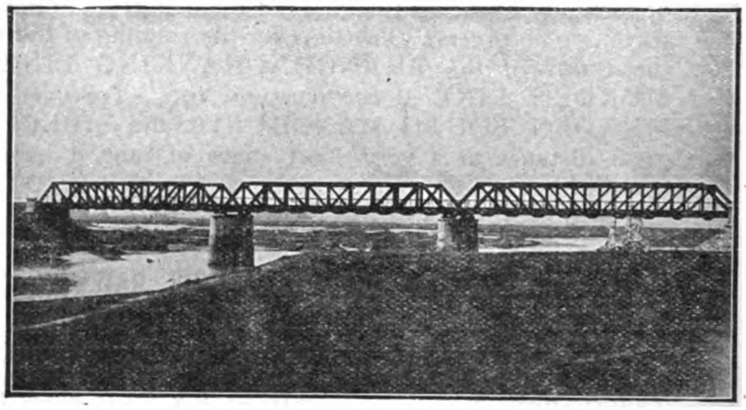


SCENERY ALONG ROUTE

THREE EXPRESS CORRIDOR TRAINS EACH WAY DAILY—HOT MEALS AND OTHER REFRESHMENTS SERVED

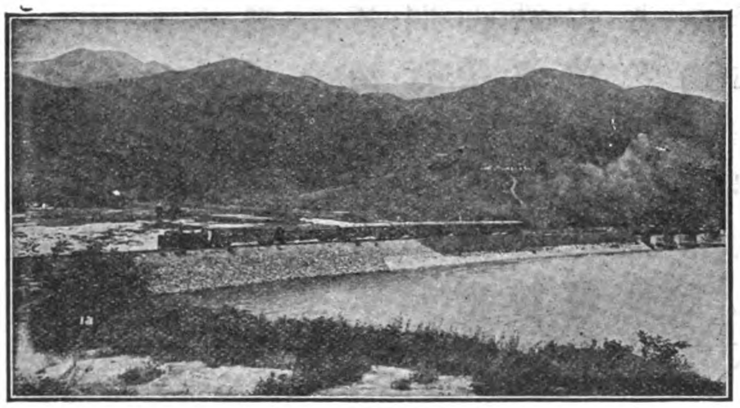


CANTON-KOWLOON RAILWAY—CROSSING TIDE FLATS

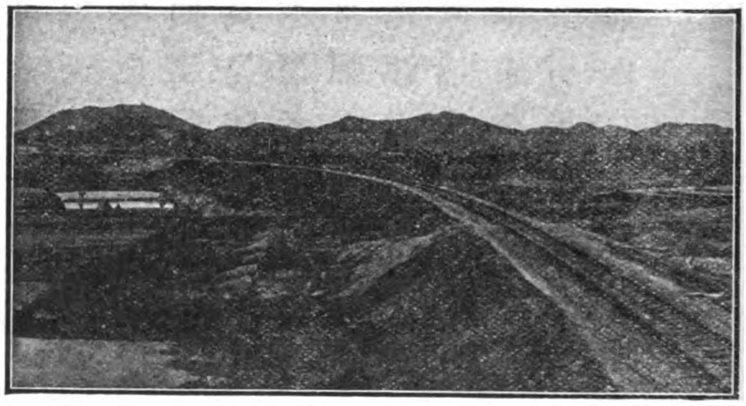


KAN SUI BRIDGE—C. K. RAILWAY

3½ HOURS BETWEEN UP AND DOWN TRAINS FOR BUSINESS MEN OR TOURISTS AT CANTON OR HONGKONG



CANTON-KOWLOON RAILWAY—EMBANKMENT APPROACH TO BRIDGE



GRAND CURVE NEAR SHEUNG PING

TIME TABLE from November 7th, 1918

Leave Hongkong (Kowloon) *8.05, 9.20 a.m., *3.00 p.m.
Arrive Canton (Tai Sha Tou) 11.50 a.m., 5.10, 6.40 p.m.

Leave Canton (Tai Sha Tou) *7.30, 8.35 a.m., *3.30 p.m.
Arrive Hongkong (Kowloon) 11.10 a.m., 5.38, 7.25 p.m.

Special terms and special trains for large tourist parties. For further particulars see advertisements or apply to

*Express THE MANAGER (British Section), Kowloon, HONGKONG. THE ADMINISTRATION (Chinese Section), CANTON.

Andersen, Meyer & Co., Ltd.

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Specializing in Machinery and Supplies which bear the guarantee of quality of well-known manufacturers. We have resident engineers qualified to make recommendations in the application of machinery, prepare designs, and supervise installations for

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MINING MACHINERY AND EXPLOSIVES
TEXTILE MILL MACHINERY
FLOUR AND OIL MILL MACHINERY
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STEEL SHEETS, Black and Galvanized, Plain and Corrugated.

Makers of SPECIAL STEEL PANEL PLATES hydraulically flattened and resheared to exact dimensions. Other STEEL SHEETS to Special Analyses. Brands: "E.V." "Furnaces," "Napoleon."

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STANDARD SIZES AND GAUGES. WELDLESS COUPLINGS.

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GENERAL CASTINGS (UP TO 40 TONS).
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BEST QUALITY TAR, and Sulphate of Ammonia produced by Direct Recovery Process.

Coal Output Capacity	**3,500,000**	**Tons per annum.**
Pig Iron „ „	**300,000**	**„**
Steel „ „	**250,000**	**„**

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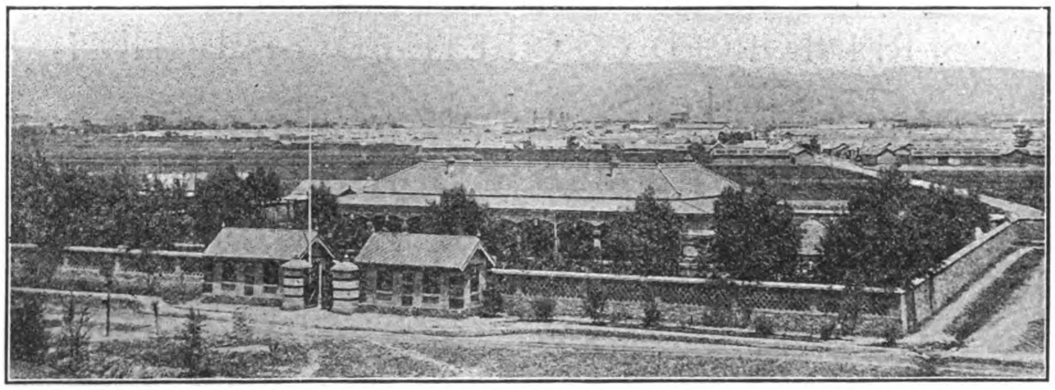
(CHINESE GOVERNMENT HONAN LINE)



A VIEW ON THE TAO-CHING RAILWAY, WITH MINE IN DISTANCE.

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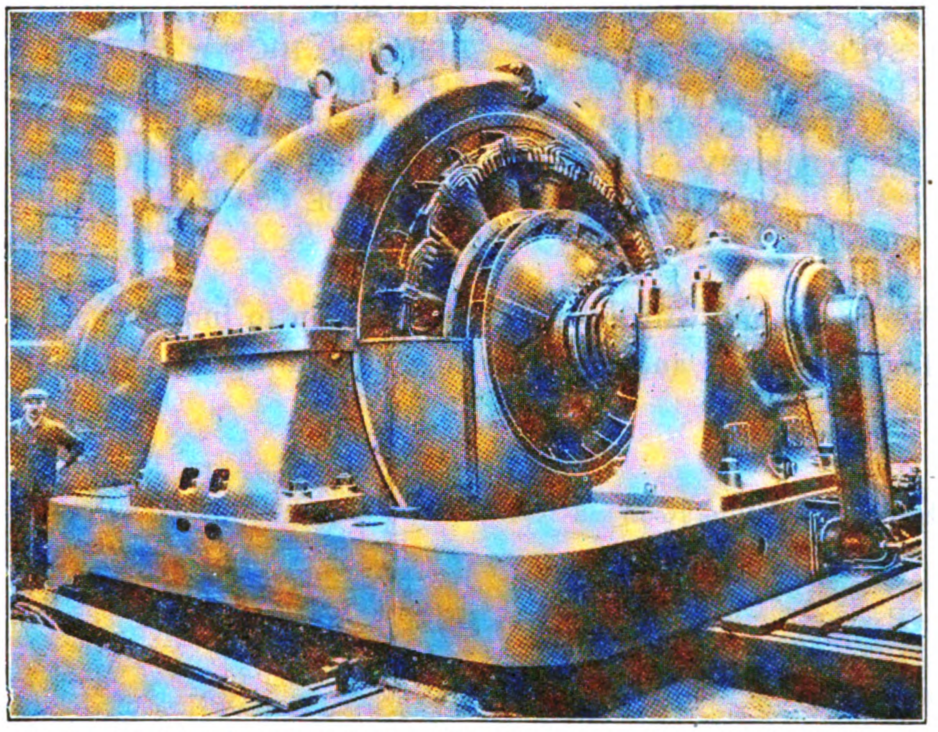

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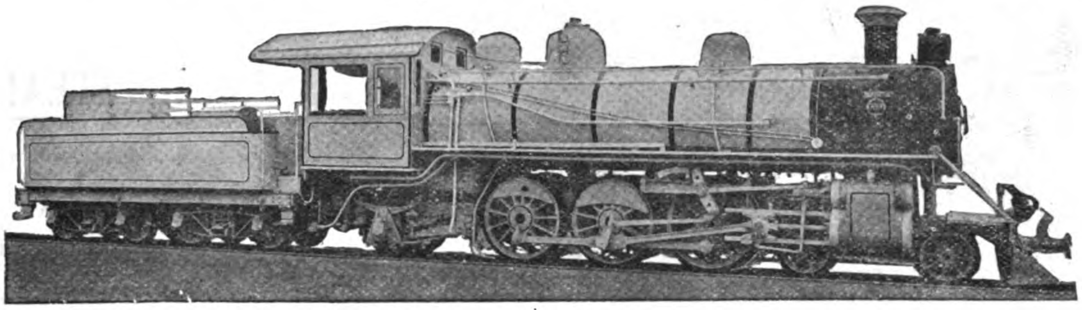


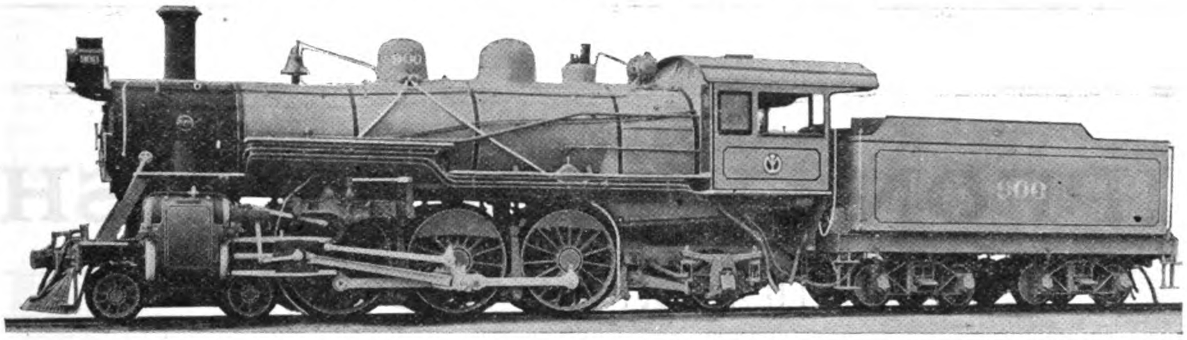
PACIFIC TYPE LOCOMOTIVE FOR THE FEDERATED MALAY STATES RAILWAYS.

Gauge—3' 3$\frac{3}{8}$"
Cylinders—17" x 24"
Coupled wheels, diam.—54"
Steam pressure—170-lbs.
Grate area—24.9 sq. ft.

Water heating surface—1,403 sq. ft.
Superheating surface—350 sq. ft.
Weight on coupled wheels—67,400-lbs.
Weight, total engine—114,800-lbs.
Tractive force—18,600-lbs.

The best locomotive for any given service can be selected only after a careful study has been made of the conditions under which it is to be used. Our engineers are at your service, and will gladly help you choose locomotives specially fitted to do your work.

The illustrations show two Baldwin Pacific type locomotives, recently built for railways in the Far East. This type does its best work in express passenger service, and is equally suitable for either narrow or standard gauge.



PACIFIC TYPE LOCOMOTIVE FOR THE SOUTH MANCHURIA RAILWAY.

Gauge—4' 8$\frac{1}{2}$"
Cylinders—21 x 26"
Coupled wheels, diam.—69"
Steam pressure—200-lbs.
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Water heating surface—2,455 sq. ft.
Superheating surface—589 sq. ft.
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Weight, total engine—199,600-lbs.
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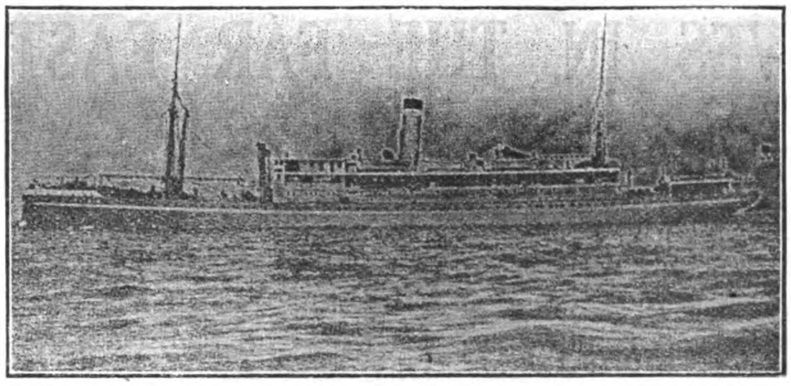

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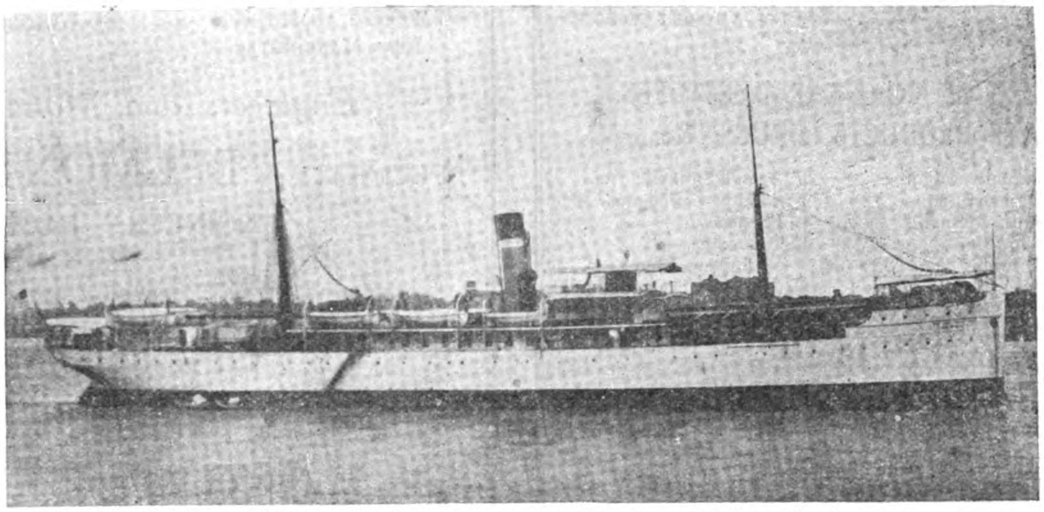

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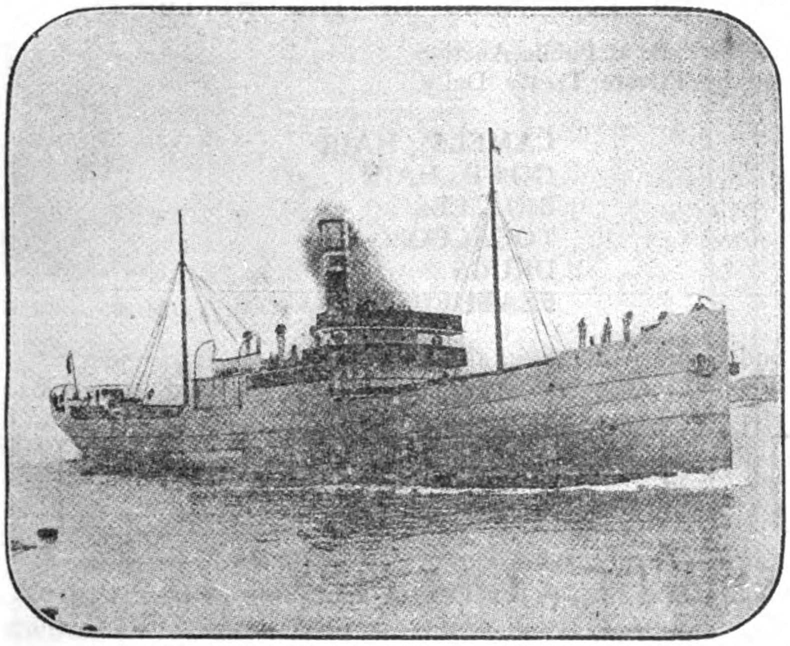

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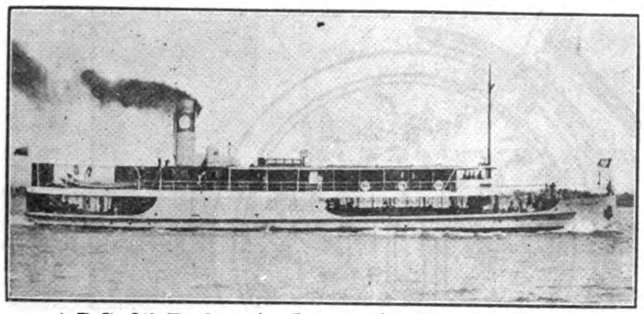

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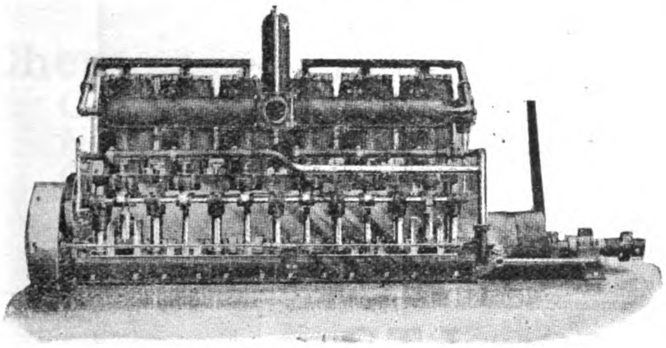

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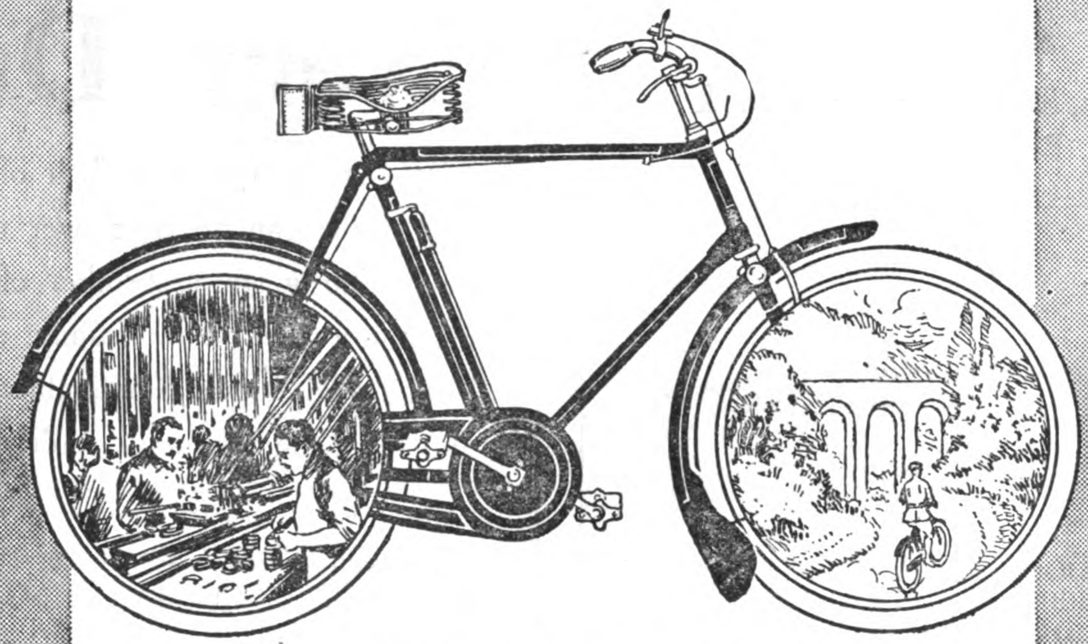

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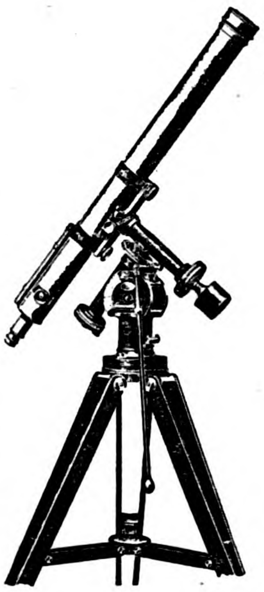

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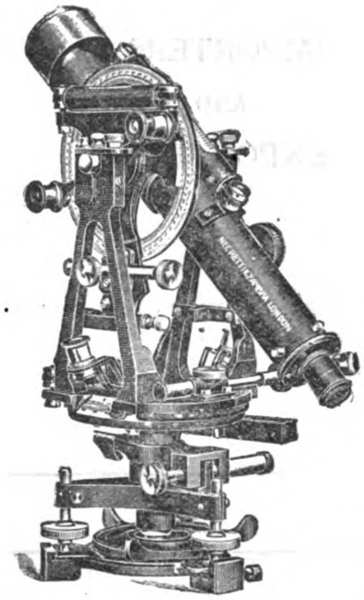

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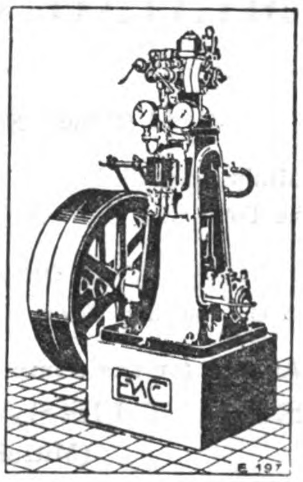

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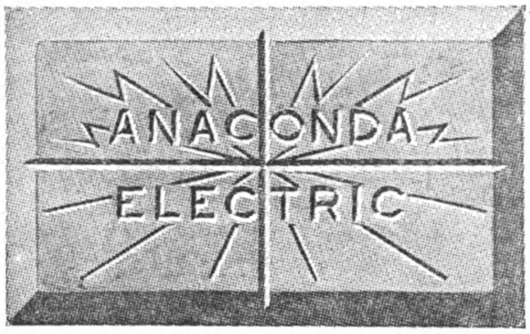

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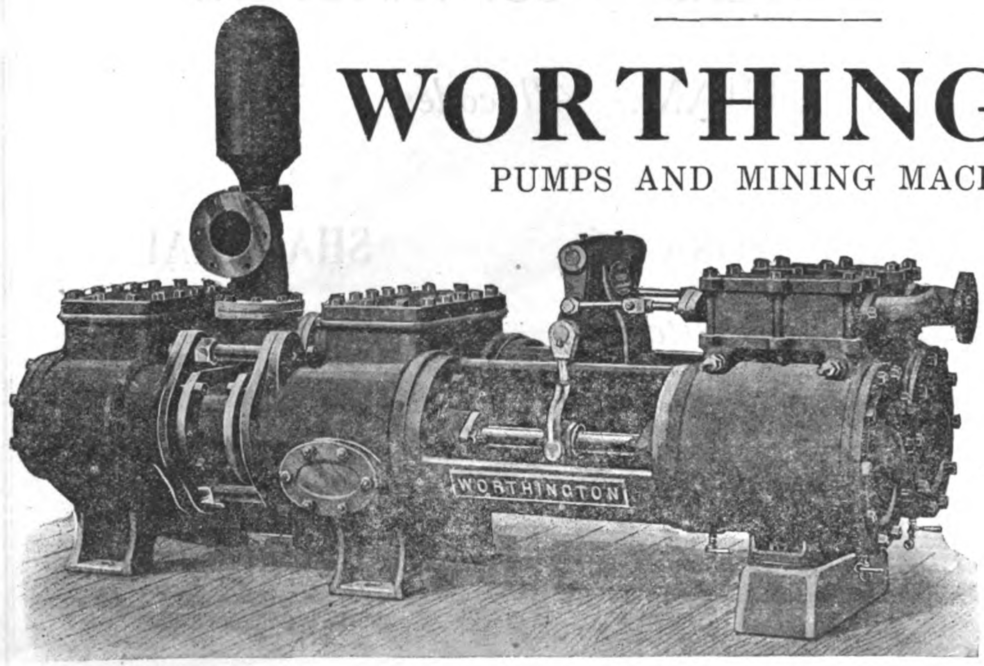

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The Far Eastern Review

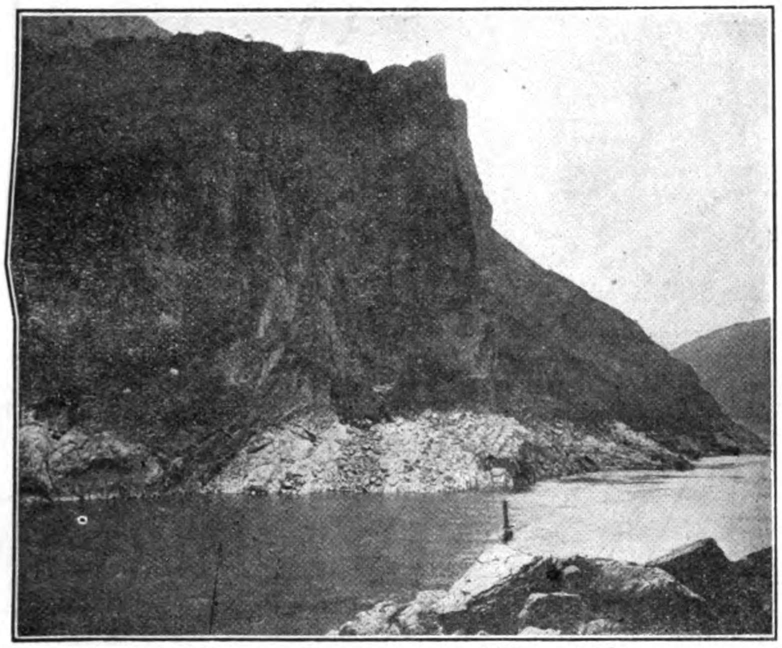
ENGINEERING FINANCE COMMERCE

VOL. XVI SHANGHAI, FEBRUARY, 1920 No. 2

Gigantic Works Needed on the Yangtze

Hankow "Barred" in Winter for Ships over 8-ft. draft: Chinkiang Left High and Dry, and Shanghai's Future as a Leading Ocean Port Menaced

IT was by no means unforeseen that one of the resolutions passed at the Conference of British Chambers of Commerce in China, held in Shanghai during the early part of November, should deal with the question of meeting the gigantic problems presented by the Yangtze to China in general and to steam navigation in particular—problems on the correct solution of which depends the economic future of one of the largest and most important parts of China. The resolution was in fact a belated recognition of the demand for attention to this subject by the best conservancy engineers—a demand that has been noticed by observers for some years past.



In the Yangtze Gorges near the Village of Hsintan

The problems which the river presents are as big as the Yangtze itself, and apart from the benefits which a proper regulation of the river would ensure, the whole question has this great feature : if mere man is to succeed in taming this giant, he will have to marshal his best forces and resources before attempting to place even the slightest curb upon it.

Shortly before the Conference took place an inquiry was held into the circumstances attending the loss of the str. *Tamsui* in the Yangtze below Hankow, and the evidence then adduced pointed to the need of further and greater study of the currents of the river which are playing so important a part in this huge waterway. Rapid silting, a bed which makes and unmakes itself with a celerity which takes all the time of foreign inspectors to maintain a watch over it, the seasonal high water and shallows, the gorges and their rapids, all present problems which have to be met and in the division of the river into Upper, Middle, and Lower Yangtze* may be found a rough classification of the two general types of difficulties which engineers in the future have to face in dealing with this river.

We heartily agree with the purport of the resolution; we think that the subject is one which could with advantage be taken up by other corporate bodies in China for the purpose of strengthening the hands of those who are taking the larger view of the whole question. The time has undoubtedly come when the immediate needs of improvement and the resources available to do this should be thoroughly looked into.

The immediate question which, it must be confessed, overshadows the larger issues by reason of the prospects of so quick a return on the money to be spent on it, is navigation. The rapids in the great gorges are as dangerous as they ever were, and with the recognition that something has to be done to render possible the easier tapping of the wonder province of China--Szechuan—comes the appreciation of the fact that the removal of the more dangerous rocks may be possible in order to mitigate the present evils to be encountered on a voyage from Ichang to Chungking.

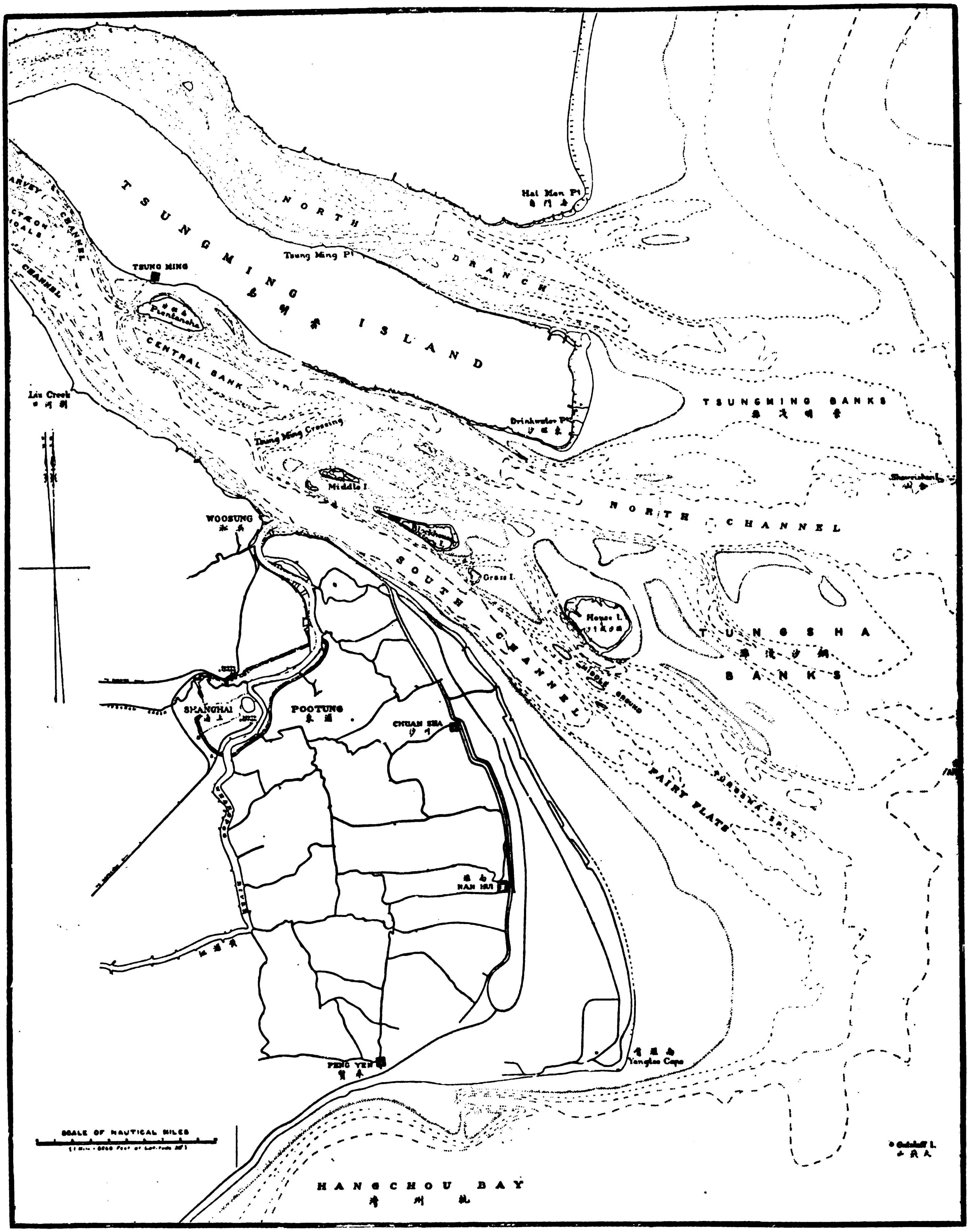
The alternative consists of works on an enormous scale connected with canalization, water-power schemes of the greatest magnitude necessitating enormous capital outlay and huge risks. Possibly the two might be combined, rock removal coming first and relieving some of the difficulties of the whole situation, while embarkation on the larger scheme is awaited. In any event there are prospects that this section of the river would have to wait for some considerable time.

Below Ichang, as far as Hankow, improvements are, however, possible as regards ensuring the greater safety of river steamers, though here it is possible that when immediate benefits are weighed against what eventually would have to be done, it might be found that temporary amelioration was not the most economical way of handling the matter.

Hankow, which has before it a tremendous future as a railway centre, suffers from the fact that during the winter—the low water season—the shipping visiting the port can only enter by channels restricted by crossings and bars which only yield eight feet of water. These passages can be improved, but the port of Hankow and the districts it serves would naturally be expected to raise a large part of the funds to be spent on the work.

Chinkiang is a victim to the changing of the deep water channel of the river. It is, again, a local problem vital to the existence of the port. Technically, the problem is one of forcing the deep water channel back into its old course, close to the present Bund of Chinkiang—or

* *Upper*—Chungking to Ichang; *Middle*—Ichang to Hankow; *Lower*—Hankow to Woosung.



Part of the Estuary of the Yangtze River, showing the approaches to Shanghai

of dredging continually along the present frontage in order to keep a sufficient depth of water at the hulks and pontoons.

The other river ports are well situated in regard to access of steamers, and have, so far, no urgent need of improvement of the channel.

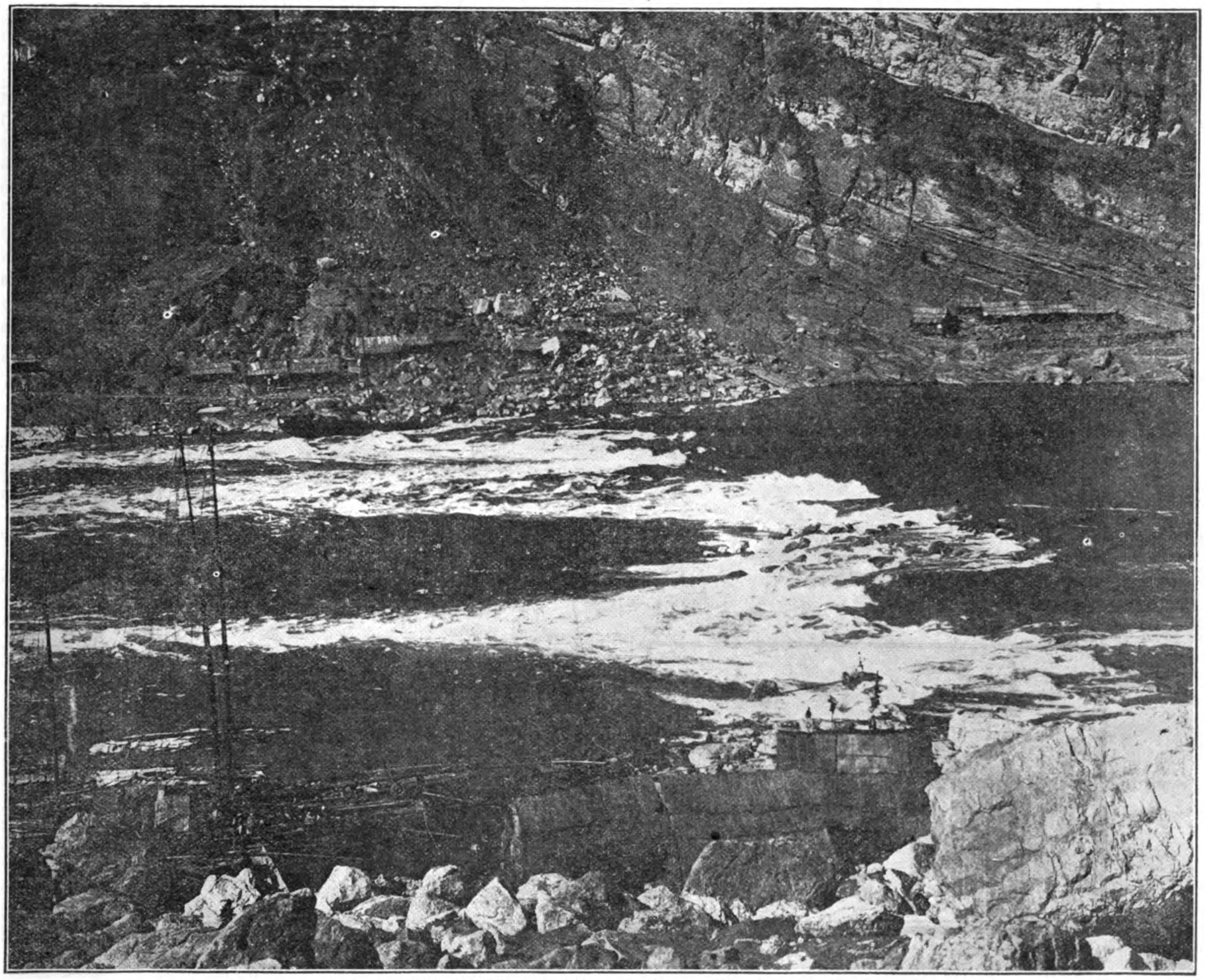
Shanghai, as the principal seaport of the Yangtze, has its own enormous bugbear in the shape of the Fairy Flats in the mouth of the river, and at the present moment the question is under consideration as to the best means of improving the passage of the Flats or of circumventing the difficulties which they present. The Shanghai Conservancy Board has the matter of inquiry in hand, prompted by its Engineer-in-Chief and other experts, and extensive reports have already been issued by the Board on the subject. There is every reason why Shanghai should take up this battle with the silt if it can be done within the limits of its resources, and there can be little doubt that the vested interests of the port can be depended upon to make considerable efforts in this connection.

Generally speaking, however, and quite apart from the needs of navigation, the river first needs a complete recharting, on the basis of a thorough modern survey, as well as the main tributaries. Already the marine staff of the Chinese Maritime Customs have been surveying the Estuary, and, having recently made chart making a business, are equipped for such work and, probably, are prepared to continue if funds are forthcoming.

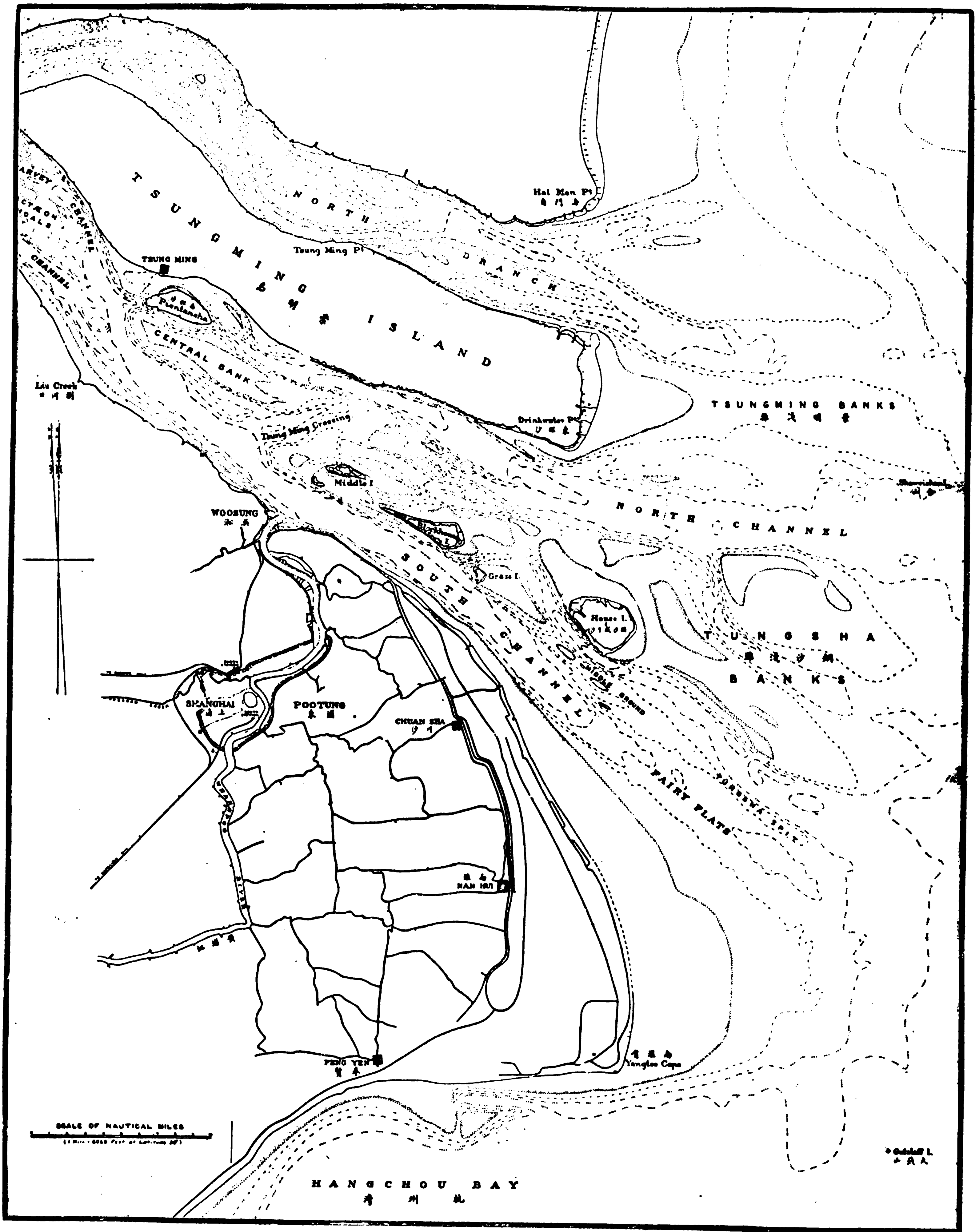
But there is a danger against which all concerned should be warned. That danger is to plunge into a make-believe organization and an amateur scheme—for which China is such a fertile ground and which are so dear to certain classes of Chinese.

This is one of those questions in which all who are interested and keen to promote a solution, should do their utmost to see that the matter is properly gone into, without undue haste, and that the best expert advice is procured, followed when obtained, and finally that the machinery created to handle the work is both worthy and capable of the immense task before it.

In due course, after completion of the surveys—when all concerned will have had time to consider and estimate the extent of the needs to be met, the interests involved and the resources that can be counted upon—a preliminary representative commission of delegates and specialists—to report on general constitution and organization, practical possibilities of improvement and ways and means, would appear to us to be the next step, prior to the institution of any general River Conservancy Authority.



The Hsintan Rapids on the Upper Yangtze



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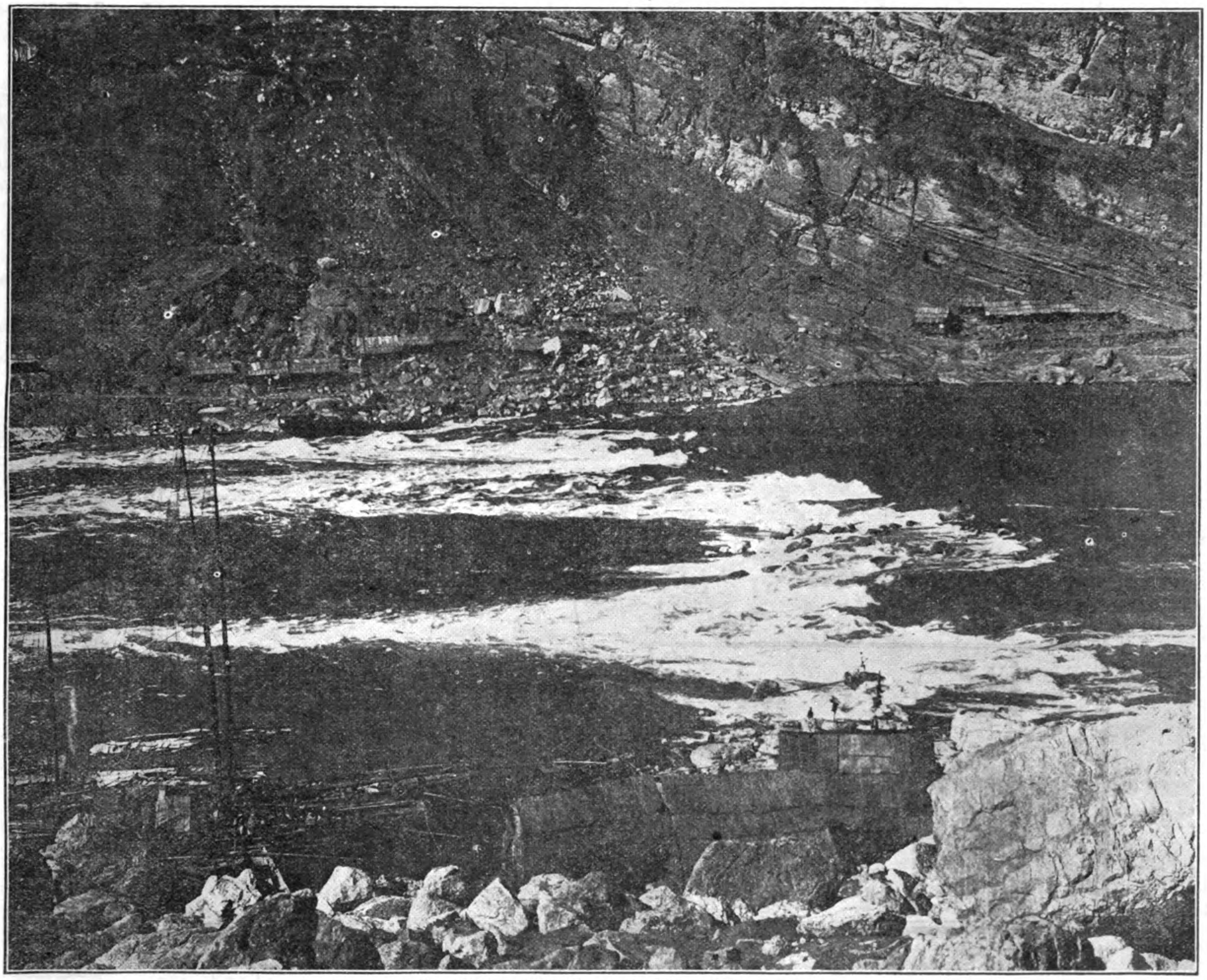

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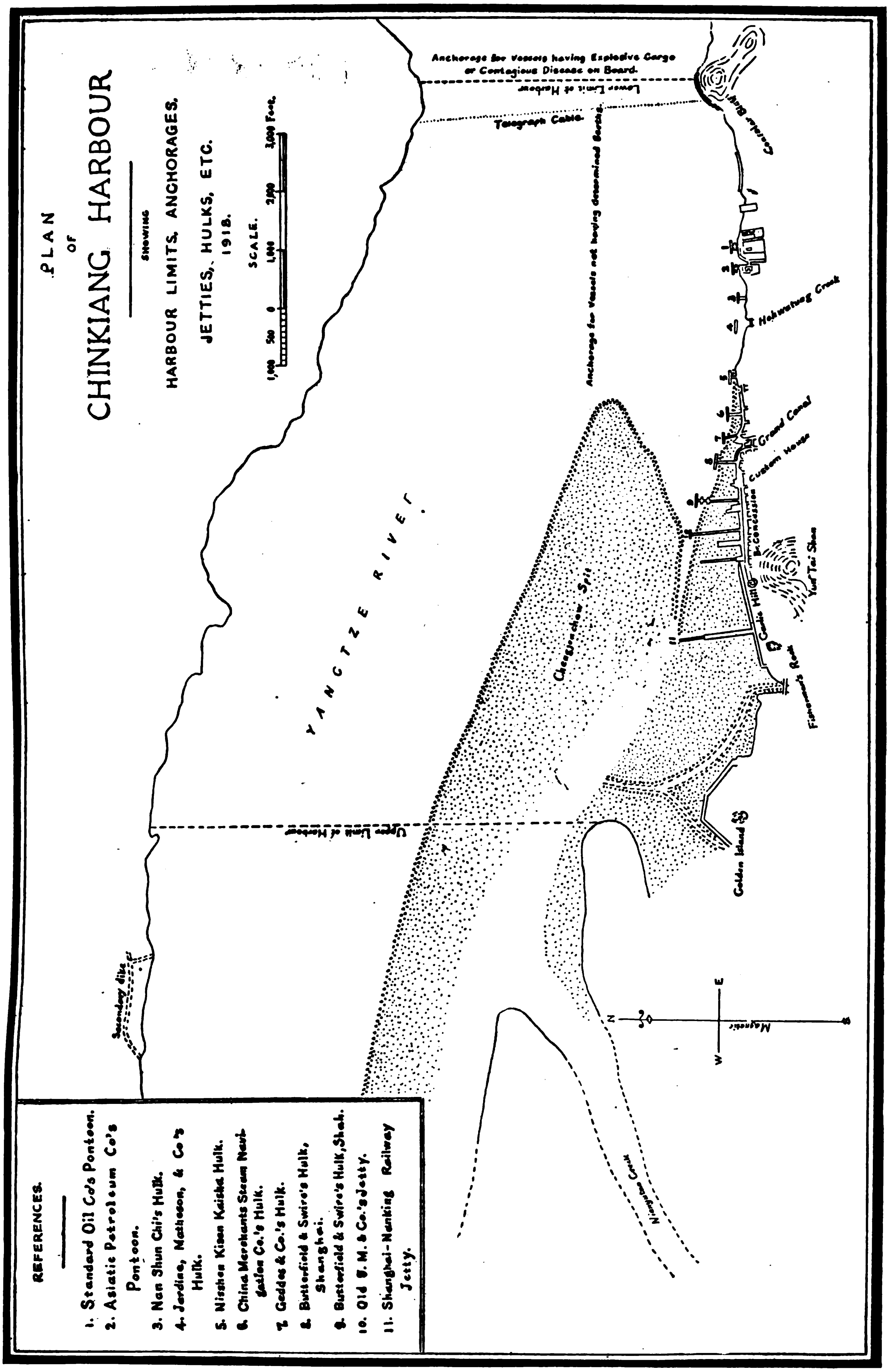


Plan showing the formation of the Chengienchow Spit which is menacing the port of Chinkiang. A casual glance at this plan will show how the foreshore of Chinkiang is being cut off from the deep water of the river.

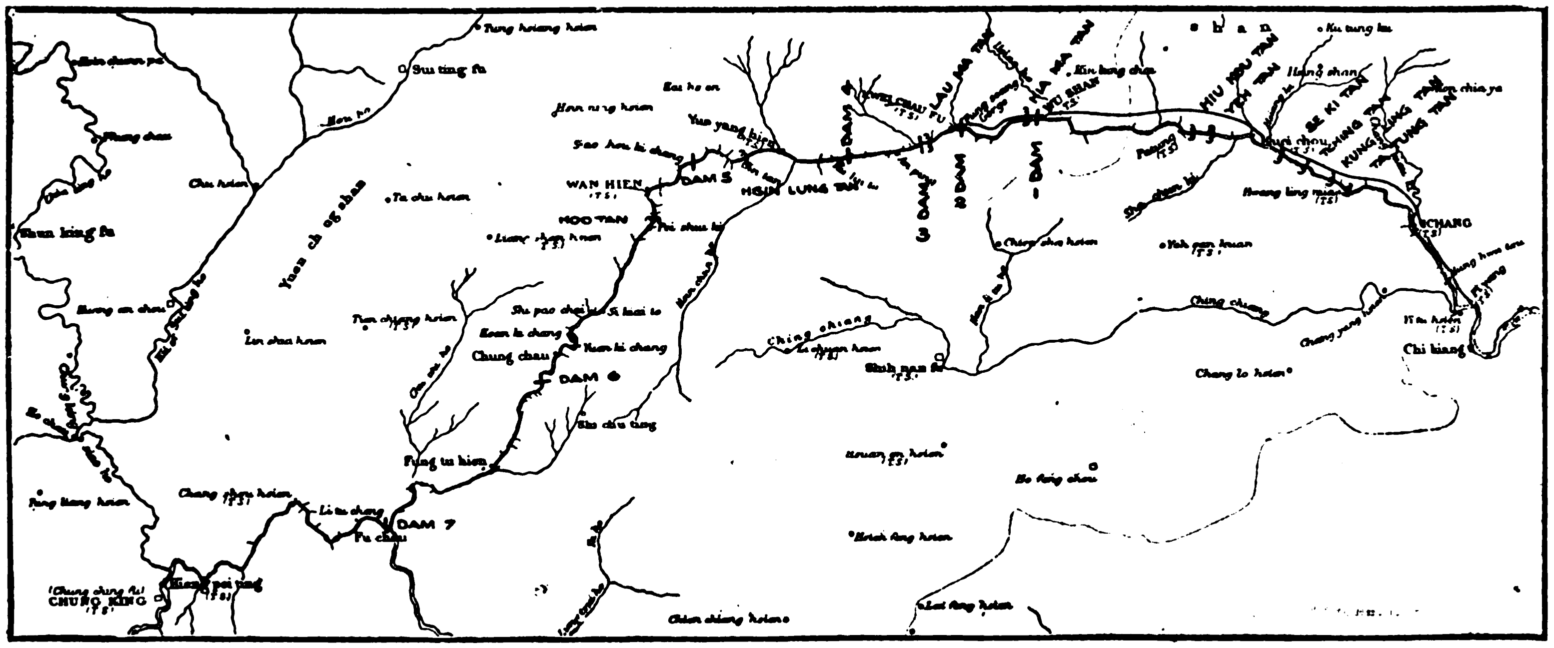
The Doomed Port of Chinkiang

For nearly twenty years Chinese and foreign merchants, shipping companies, Customs authorities and others have been much distressed by the marked decline in the trade of Chinkiang. The Customs reports by the various Commissioners stationed at Chinkiang since 1906 year by year rehearse the difficulties under which both Chinese transport by small boats and large river steamers, whether Chinese or foreign, labor in their efforts to keep Chinese local products moving through the port to the larger shipping centres and to distribute foreign goods from Chinkiang to the various rural districts which were formerly dependent upon it as a distributing centre. How to save Chinkiang both as a market place and as a convenient port for river vessels has elicited much anxious thought from the various Customs Commissioners and from the experts whom they have consulted. Every official and business man who has been stationed at Chinkiang during the last two decades has seemed to regard this as one of Chinkiang's very vital problems. If this attitude were due entirely to self-interest or acquired local patriotism, if it could be shown that the products which formerly passed in and out of Chinkiang are now passing through other shipping centres with as much expedition and at less expense, it would be good trade policy to put the local clamor down to either petty local interest or sentimentalism, and to permit the port of Chinkiang to go the normal way of the unfit.

There is, however, very good reason to believe that it is possible to prove that with the introduction of scientific conservation in the rich rural districts both north and south of the Yangtze River which formerly were entirely dependent upon Chinkiang, the port will again become not only a convenience but an economic necessity : and that any funds expended in the immediate future in making arrangements for the continuation of shipping activities and improving the many tributary waterways which establish its connection with northern Kiangsu, southern Shantung and Anhwei, not to mention those in the direction of Soochow and Hangchow, will be an eventual economy.

Chinkiang is one city in China which the development of railways has not materially helped except in a superficial way, but its greatest enemy has been silt. Much of the native produce which formerly came to Chinkiang for shipment, in spite of floods, droughts and the neglect of waterways by Chinese officialdom, now finds a more convenient and expeditious outlet by way of the various railways which have been built in the last two decades—the Shanghai-Nanking Railway, the Tientsin-Pukow Railway, the Tsinan-Tsingtao Railway and that section of the Lung-Hai Railway which connects Hsuchowfu with Chengchow on the Peking-Hankow line. Chinkiang's trade has been diverted through more or less direct shipments to Shanghai, Pukow and Tsingtao, and even to Tientsin and Hankow. If the Lung-Hai Railway were completed from Hsuchowfu to the port of Haichow, Chinkiang's loss would be even greater. Pengpu on the Hwai River and on the Tientsin-Pukow Railway has grown from an insignificant village to an important trading centre largely at Chinkiang's expense. There is no denying that thanks to improved railway communications the general volume of trade in the districts which were formerly solely dependent upon Chinkiang is much greater, but it can be asserted with equal assurance that many of the productive areas now lost to Chinkiang will find it much more economical to trade with the coast ports through this market when the Grand Canal and the many minor canals and rivers which it intersects have been properly dredged and developed as waterways.

If one studies the reports of the Chinese Maritime Customs for the last fifteen years, it will be found that the condition of the Grand Canal and the chronic propensity of the Huai and other rivers to create devastating floods and ruin both agriculture and transportation, were at one time the major tribulations of those who were interested in Chinkiang's trade. But in recent years the one great Chinkiang bogie has been the growing and moving island of Chengjenchow. As early as 1907 it is mentioned in Customs reports as an island to the west of the Foreign Concession, separated from the south bank of the Yangtze by a narrow channel. At that time the northwestern end of the island was being eroded, and Commissioner F. E. Taylor mentions in his report that a spit had been thrown out to the east which had extended 5,000 feet in two years. Successive reports during the last twelve years are filled with chronicles of the growth of this spit until it is now said to have blocked the southern entrance to the Grand Canal, since when it is prophesied that "it will not be very long before the entire river frontage down to Consular Bluff (Peikoshan) will be utterly unapproachable."



Plan of the Upper Yangtze showing position of Rapids and Sites for dams proposed by Mr. Sidney J. Powell

Between 1914 and 1915 there was a loss in Chinkiang's trade of more than Tls. 2,000,000 and at the end of the latter year the trade total was only 54 per cent. of that recorded in 1906. In the meantime both the output of native goods and the consumption of foreign goods in the districts dependent upon Chinkiang had probably been multiplied many times, but the siltage in the Grand Canal both north and south of the Yangtze River, the poor condition of the minor waterways which have been constantly dry or over-flooded as droughts and inundations alternated, and the growing difficulty of loading and unloading steamers between the Chinkiang bund and the Chengjenchow bogie have so discouraged rural producers and consumers that they have given their patronage, whenever possible, to the more reliable though more expensive railways.

A view of the Sanchi Gorge on the boundary line between Hupeh and Szechuan Provinces

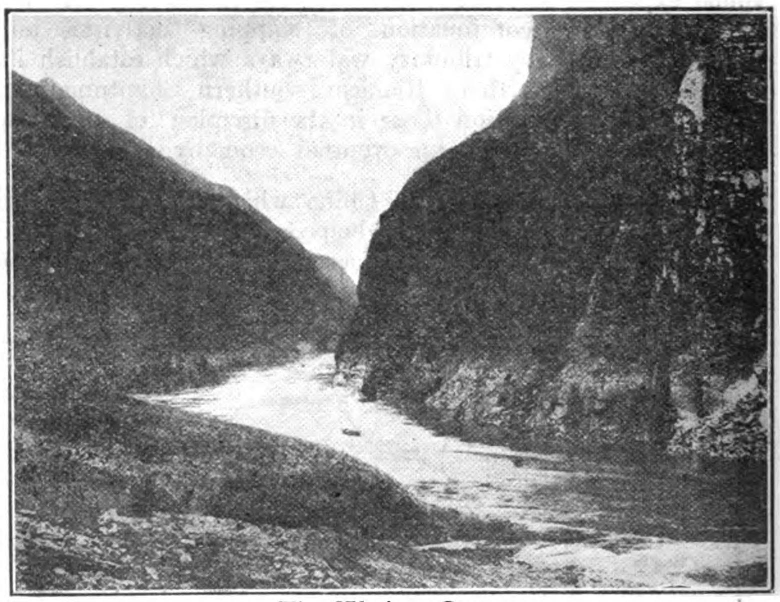
A running chronicle of the tribulations of the Chinkiang merchants may be found in the annual Customs reports from 1906 down to the present time. The various Commissioners who have shouldered Chinkiang's troubles have agreed heartily upon the sources of these troubles, but as they have consulted various authorities, they have been of various opinions as to the possibility of alleviating them. Some of the reports ring with despair, and declare that Chinkiang is doomed, unless great engineering work is undertaken to deal with the Yangtze, for that great river, being left to its own devices, is cutting a new bed to the north and banking up new mud flats on the south which will inevitably cut Chinkiang off from the main channel of trade. In other reports there is a note of hopefulness. In the report for 1918, Commissioner of Customs F. J. Mayers, says of the Chengjenchow sandspit, the fungus-like growth of which is reported from year to year in the Customs records with something like the fascination of horror; "The removal of this now large island . . . . would not be difficult from an engineering point of view. The statements that have been made that remedial measures are 'impossible' were apparently based on exaggerated estimates of the cost of the work, which in a matter of such enormous public importance should not be allowed to interfere with any well considered scheme for the amelioration of existing conditions."

Harnessing the Upper Yangtze

The problem of the Upper Yangtze is a special one which, if adequately dealt with, calls for high class engineering. The river is one steep descent through tremendous gorges and is barred in parts by serious obstructions which cause at periods unsurmountable rapids. Mr. Sidney J. Powell, A.M.INST.C.E., F.R.G.S., of Shanghai, some time ago made an investigation of this section and notes from a report which he has made should be of the greatest interest to all concerned in the possibility of rendering this part of the river feasible for unlimited steam navigation.

Mr. Powell points out that the section which would have to be dealt with stretches over 400 miles between Ichang and Chungking. Between these two ports there are 35 rapids, those between Ichang and Wushan being caused by the detritus brought down by mountain torrents and are not so dangerous when the water is at high level, the rapids disappearing with the rise of the river. Mr. Powell says that the greatest source of danger at all the rapids is rapidity of flow combined with narrowness. This rapidity which sometimes is as high as 10 miles per hour is not dangerous where there is plenty of width, but it becomes a great danger when a vessel ascending or descending has a channel only 50 feet wide in which to navigate, especially when that channel is tortuous.

It is estimated that 11 per cent. of the junks plying on the Upper Yangtze are damaged or become a total loss, a condition which would unquestionably be made better by intelligent work calculated to widen, deepen, and straighten the channels at the rapids. The rise of the river is extensive, and at Chungking has been as high as 117 feet—40 feet of this rise occurring within one day and as quickly subsiding. The rise generally begins in February and is at its highest during July and August, a sudden rise, sometimes as much as 40 feet, being caused by freshets coming down the Yangtze river and the Kialing river simultaneously meeting at Chungking.



The Wushan Gorge

The descent of the Yangtze between Chungking and Ichang can be appreciated when it is mentioned that the latter port is 610 feet above sea level, while Ichang is 134 feet, the difference in height thus being 476 feet. This means, Mr. Powell reports, that the upper Yangtze between the two cities is endeavoring to create a slope of one foot in 4,450 feet, or twice as steep as an ordinary river.

Mr. Powell found that the slope of the actual bed of the river varies very greatly and in reality is constituted of a series of pockets in some of which there is a depth of 200 feet. The sides of the pockets are the ridges where the rapids occur and the narrows or gorges where the river is

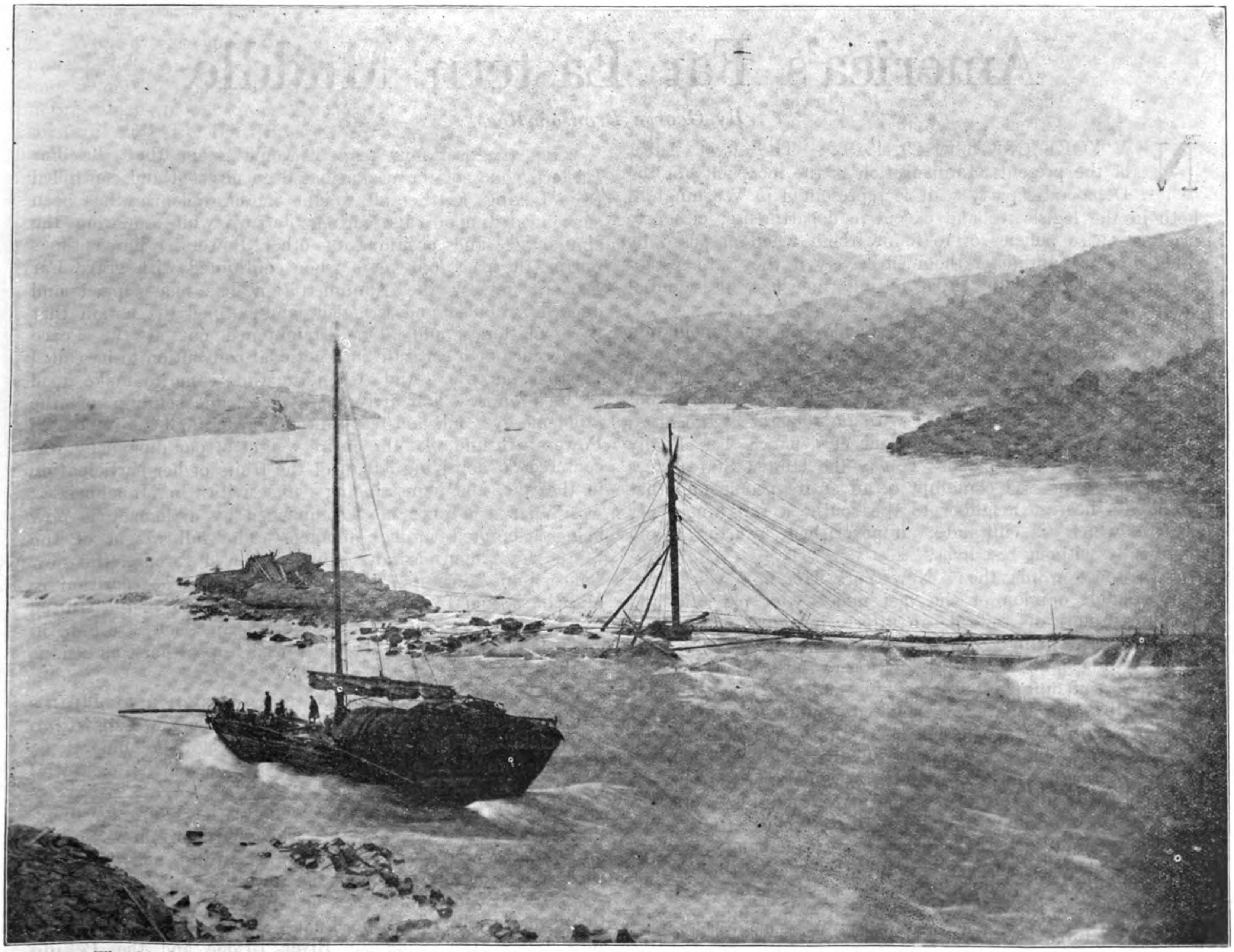
narrowed down by the precipices through which it has eaten its way. It must be remembered that the gorge at Ichang is the only water outlet from the Great Szechuan plain, and that plain in Mr. Powell's opinion, was formerly a sea of water with a discharge of flood water over the comparatively low hills south of Yunyanfu a city in the northwest corner of Hupeh, on the river Han.

Hydro-Electrical Possibilities

The tremendous possibilities for hydro-electrical developments on this river will be appreciated when it is mentioned, as Mr. Powell points out, that the discharges of the river at Chungking are 75,000 cubic feet per second at average low water; 774,000 cubic feet per second at average flood, and 1,065,000 cubic feet per second at highest flood. The horse power developed by the river at average low water is 430,000, or 319,780 kilowatts. At average flood it is 4,400,000 horse power or 3,282,400 kilowatts. Mr. Powell emphasizes that this latter power is 30 per cent. more than the power possibilities of the Niagara Falls—this being estimated at 3¼ millions horse power—where the head obtainable is 145 feet.

How the river may be conserved and how this valuable potential energy may be used is set out by Mr. Powell in a program based on improvements of the bed and channel of the river. There are, he says, nine bad rapids between Ichang and Wushan (90 miles), namely, (1) Tatungtan, (2) Kunglingtan, (3) Tchingtan, (4) Lienhoatan and Sekitan forming one long rapid, (5) Yetan, (6) Niukoutan, (7) Tsingchupiao, (8) Fulitsi, (9) Wanliautan, which could be improved by the removal of rock at low water and by dredging the detritus collected in the bed of the river to an average width at low water of 900 feet and a depth of 15 feet. Two-thirds of such necessary work could, in the opinion of Mr. Powell, be done in the low water season, while, by employing a Lobnitz rock-breaker or similar machine, the remainder of the rock could be easily removed. Bucket dredgers capable of lifting 500 tons an hour could be employed, to lift the broken rock and detritus. The deep holes in the channel could be filled with the material thus excavated.

Mr. Powell proposes to eliminate the rapids between Wushan and Chungking by the erection across the river of a series of dams 50 feet in height above low water level, the dams to be pierced with regulator openings operated on the Stoney principle by electric motors, and provided with three locks each, the lift of each lock being 18 ft. 8 in. This would mean 21 locks between Wushan and Chungking, each lock being 250 feet long by 50 feet wide, to be operated by electric motors. The electric motors for operating the re-



The Glorious Dragon Rapid (or Hsinlingtan) showing Staging Leading to Rock (on Extreme Right of Picture) in the Middle of the Stream Preparatory to Blasting

gulator openings would be situated on a bridge to be erected on the crest of each dam.

Mr. Powell estimates that seven dams each 3,000 feet long will be necessary at Wushan, Kweichaufu, Nganping, below Yunyanghsien, above Siaokiang, above Chungchow, and at Fuchau.

At each dam hydro-electrical installations could be erected, but Mr. Powell thinks that at the outset one large installation at the Wushan dam would be sufficient, though power would be similarly supplied at each dam for the operation of the regulator openings and lock gates.

In addition to the improvement of the river Mr. Powell urges the construction of a 200-mile railway from Wushan to Yunyangfu, in Hupeh Province, to assist in the development of Szechuan by connecting the Upper Yangtze with the Han River. He also advocates the improvement of the Han River from Yunyangfu to Hankow. The Han is navigable for vessels of five feet draft from Hankow up to Laohokow, which is 80 miles from Yunyangfu, and between these two cities is navigable for small craft and can be improved.

The Question of Cost

Mr. Powell estimates that the improvement of the rapids will involve the breaking of 2,000,000 cubic yards of rock and the dredging of 6,000,000 cubic yards of detritus and rock, the cost of which he approximates at £450,000. This includes the cost of two rock-breakers, two bucket-dredgers, upkeep, repairs and all machinery and labor in connection with the work. As the two rockbreakers would be capable of dealing with 900 cubic yards of rock per week and the bucket-dredgers with 500 tons per hour it is estimated that the work could be accomplished in 4 years.

The cost of dams and locks, consisting of masonry dams each 3,000 ft. long and 60 ft. high with 150 regulator openings, bridge along crest of dam and 3 locks, is estimated at £1,030,000, and 7 dams each with 3 locks as above £7,210,000.

The cost of a hydro-electric installation below Dam No. 1 near Wushan, including cost of buildings, penstocks, conduits, turbines, generators, tail race, etc., to develop 25,000 kilowatts, is estimated at £600,000.

A railway (gauge 4 ft. 8½ in.) from Wushan to Yunyangfu, including terminal stations, wharves, bridges, signals and telegraph, but not including rolling stock, is estimated to cost £1,440,000.

Improvement of the Han River to a depth of 10 ft. and a width of 900 ft. is estimated at £825,000. These improvements Mr. Powell estimates, would involve a total cost of £10,525,000.

America's Far Eastern Muddle

By George Bronson Rea

NEW YORK, November 29, 1919:—"The great defect of the present administration is the incapacity of the Democratic party as it is represented in Washington, both in the legislative and executive departments, either to originate wise policies or to follow them when proposed by others, or to administer them effectively if they are established," declared Elihu Root during the last presidential campaign.

"A policy of vacillation, of feeble tries at conciliation where force and strength were needed, of threatened force where intelligent diplomacy might have served, of watchful waiting, of punitive expeditions which failed to punish, and of near ultimatums dispatched with no thought of the alternative to be employed in the event of defiance has finally come to fruition in Mexico. To-day the United States faces the openly expressed contempt of an entire people and that people its nearest neighbor to the south, a full ninety per cent. of which is illiterate, impoverished, wartorn, and practically without resources."

In these words the "New York Herald" voices the unmistakable opinion of the vast majority of patriotic and thinking Americans towards an utterly incompetent administration whose inability to originate or follow wise policies is slowly but surely leading the nation to the brink of another war, a war of murder, bushwhacking and atrocities, the only warfare that can be waged by a semi-civilized, disorganized people, a repetition of the horrors of the Cuban insurrection.

The same methods, the same tactics, the same ignoring of vital principles, is imperceptibly widening the breach between the United States and Japan. The Far Eastern policy of the Administration is a disgrace to the nation. Our interests in that part of the world have been handed over to theorists, idealists, propagandists, uplifters and impractical literatii whose crass ignorance of practical international politics is luring the country deeper and deeper into the web of Oriental intrigue from which there is no escape short of humiliation.

For the past four years it would seem that the Far Eastern policy of the nation has been directed and controlled from Peking, as the full weight of our diplomacy has been concentrated upon discrediting Japan, while ignoring the similar acts and positions of other Powers. Three times during the past four years when confronted with grave Far Eastern issues, the Administration has side-stepped and ducked, wobbled and wriggled, and notified the nation that these matters would all be straightened out at the Peace Conference or a separate international convention to be called for that purpose. And, when the time came to make good on its promises, and arrive at a reasonable solution of the problems by a full and frank discussion with all the interested Powers, we find that the entire weight of our diplomacy was centered on depriving Japan of the fruits of her participation in the war, and hamstringing her activities in Manchuria.

What could not be accomplished by diplomacy is now being attempted through finance. The full weight of the State Department is now being employed through the new Consortium, to compel Japan to recede from her position in Manchuria and Inner Mongolia, and the press of the United States, who know only one side of the question, are loud in denunciations of Japan for her refusal to pool her concessions in those regions.

The State Department bases its opposition to Japan's position on the provisions of Clause X of the new consortium agreement signed in May last, to the effect that "only those industrial undertakings are to be pooled on which substantial progress has not been made."

Substantial progress will eliminate the Hukwang lines, the Belgian, Lung-Hai, the Shanghai-Hangchow-Ningpo, uncompleted sections, the Pukow-Sinyang, and, if actual surveys can be included in the meaning of "substantial progress" it will exclude the Shasi-Singyifu and the Nanking-Changsha railways. The Pukow Harbor Works, with its subsidiaries, the Yangtsze River Bridge and the Peking Public Utilities, and the Pritchard Morgan concession grant-

ing a monopoly of mining rights to the vast province of Szechuan will be immune from pooling. Mongolia is a closed preserve against Chinese Railway development, a policy that Russia will go to war to maintain, as soon as she is in a position to do so. Tibet is barred against railway and other development. All these concessions were signed previous to the war. The Japanese concessions came as a result of changed conditions during the war, consequently there has been no time to make substantial progress in their development. The object of the consortium plan, on its face, is to deprive Japan of full enjoyment of her concessions, while permitting others to proceed without becoming subject to the new arrangement.

The independent French banking group headed by the Bank Industrielle de Chine has refused to pool its valuable concessions, valued before the war at 750,000,000 francs. The entire value of the Japanese concessions will not exceed $100,000,000. Yet in face of these facts, the State Department seems intent upon pursuing its policy of irritating and discriminating against Japan in order to cover up its inability to solve these problems through a straightforward diplomatic arrangement between all the Powers.

There is nothing new to the situation. It is only a repetition of our manhandling of the Mexican problem which can only lead to an impasse in the relations between the United States and Japan.

While we are meddling in the affairs of the Orient, other meddlers are encouraging the Mexican Government to defy us on this side of the Pacific. Carranza's defense of the imprisonment of our Consular Agent at Puebla, in effect, is the same as that of the United States in the land law incident with Japan. The Federal Government of the United States could not control the acts of the sovereign State of California, and Carranza tells us bluntly that he cannot interfere under the constitution of Mexico, with the sovereign rights of the State of Puebla.

The weight of our diplomacy is being employed to check Japan in China. On all sides we hear of anti-Japanese boycotts, outbreaks and outrages upon the persons of Japanese subjects domiciled in China. There is evidence that these incidents are the outcome of American meddling in the relations between the two countries. We cannot apply one principle in one part of the world where our own interests are involved, and deny the application of the same principle in another part of the world where the higher interests of another nation is concerned.

If we go into Mexico, the precedent is created for Japan to settle her differences with China in her own way. If we recognize the force of the Carranza note which absolves the Mexican Federal Government from responsibility of the acts of the State of Puebla, we have undermined our own position whenever the anti-Japanese element in our Coast states again attempts to pass discriminatory legislation against the Japanese.

The repercussion of our Mexican policy will be felt immediately in the Far East. The precedents will be created which will provide Japan with the opportunity to settle the Far Eastern problem in her own way. And this is the penalty Americans will pay for the past five years of wobbling around, trying to muddle through one of the most delicate problems confronting the world, under the guidance of impractical and short-sighted amateur diplomats.

The only safe and sane procedure that can save American prestige in the Orient, is to revert to the policy of the President which was overruled and rejected by his advisers at Paris, and call upon the interested treaty Powers for a full and frank discussion of China's problems at a special international conference. Our enemies are many. If we bait Japan in China, those who are intent upon our discomfiture will bait us in Mexico. We cannot have our cake and eat it too.

China's Negative War

Under the above title, the "Chicago Tribune" recently printed an editorial inviting attention to a letter on the subject from Mr. J. B. Powell, Secretary of the American Chamber of Commerce at Shanghai. There seems to be a tendency to hail with a certain amount of satisfaction the boycott against Japanese goods in China, and it would appear from articles published in the American press, that this movement was being aided, or, at least approved of, by those Americans, new comers in China, in close touch with official circles. It is well to recall that this weapon was first employed successfully against American trade as a protest against our treatment of Chinese merchants and officials passing through the immigration fifth degree in San Francisco and other ports. The boycott inflicted considerable damage to American interests in China, and was the reason for one important American corporation passing under the British flag and protection. The boycott passed, but the original grievance remains as strong as ever. It is impossible to talk for any length of time with a Chinese merchant or official without his raising this question. Several experiences that have come under my personal observation, confirms the statement that this lack of discrimination on the part of American immigration officials still rankles in the hearts of Chinese officials. I can recall when Minister Koo first sailed for Europe with his secretaries, a most undignified incident was created by the New York Port authorities who demanded the papers to prove that these men were entitled to certain considerations, and again when a Chinese Minister, on his way to take up his post at Washington, was grossly insulted by the Health authorities at Honolulu, and held the passengers in the dining saloon for over one hour to compel the "Chinaman" to come out of his stateroom and pass inspection with the others. The Chinese Minister, standing on his dignity and waiting to receive the diplomatic honor of at least being "inspected" in his stateroom, was at last compelled to "lose face" and submit to the general rules. He was furious for many months afterwards. Then, as now, China is looking to the United States for moral and financial support. Consequently, they will not openly voice their displeasure of our exclusion laws and their practical interpretation.

We must remember that the so-called "racial question" is becoming each year more acute in our Pacific Coast States. To the complaints of the Chinese, is now added the resentment of Japan. Americans should always bear in mind their vulnerability on this grave question, and that a skillful propaganda carried on through the Japanese press in China against Americans, might arouse antagonisms and pave the way for another boycott against our trade. Conditions exist in China, which might be utilized by enemies or trade antagonists to turn the boycott against us again. The passive resistance of a boycott has been called the only effective weapon of a weak and defenseless people. But history tells us that every nation or people who have resorted to passive resistance, have, in the end, resisted themselves into vassalage or extermination. Americans in China and especially a Chamber of Commerce should be most careful in expressions of approval of this method of warfare.

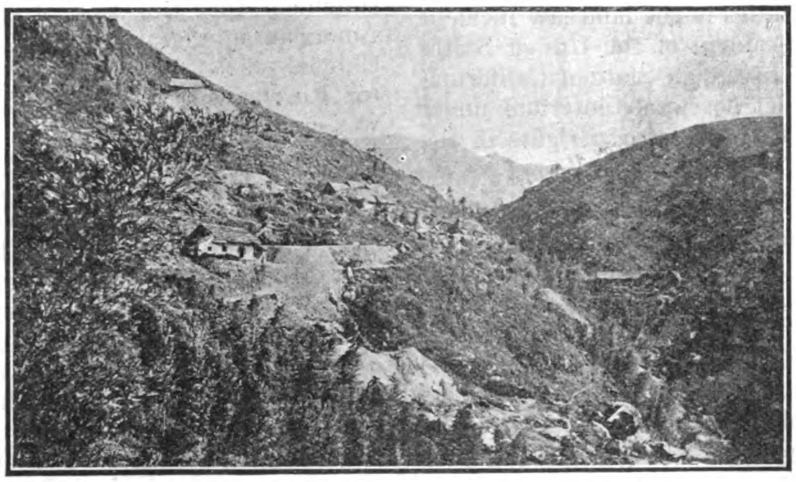
GEORGE BRONSON REA.

Mining in Hunan Province

A Sketch of the Principal Mines in the Province and the Mining Methods Employed by the Natives

THE attention recently drawn to mining affairs in Hunan Province by the signing of the agreement published in last issue for the development of mines, etc., in addition to the fact that a railway will certainly be built in the near future to open up the Paoking mining and agricultural district, add emphasis to the importance of the mineral deposits* of Hunan and the potential development of the mining industry.

Mining has been carried on in Hunan Province for centuries, but it was only recently that improvements were introduced and people began to appreciate its real importance. Thanks to the demands created by the world war, the revenue derived from this industry now constitutes the chief prosperity of the province. The antimony mines of Hsik'uangshan (Tin Mine Mountain) and the lead and zinc mine of Shuik'oushan (Water Mouth Mountain) have now an output probably exceeding that of any other similar mines in China, and, since August, 1914, enormous quantities of antimony and lead have been shipped to Europe for the manufacture of munitions of war.


A Native Antimony Mine near Paoking

Important as these mines are, little is known about the mining methods or about the conditions in the mining districts. The following information is compiled from data supplied by the natives of the districts, especially two who have studied at Tsing Hua College, as well as the official reports of the Ministry of Agriculture and Commerce (Peking), the "Technical Magazine of the Mining Bureau of Hunan" (Changsha), and the "Eastern Miscellany," etc. Because of their comparatively greater prosperity only the largest mines, *e.g.*, the Tin Mine Mountain and the Water Mouth Mountain—are treated at length. The others are more or less summarised and condensed.

Chinese Mining Methods in General

The following extract from a report made by Mr. A. S. Wheler, M.I.M.E., Mining Engineer for the Ministry of Agriculture, Industry and Commerce, in 1915, seems to hit off these methods admirably :—"A Chinese mine of the old type is a ragged hole in the ground off which numerous excavations of irregular shape have been made following the ore and working it out wherever found in sufficient quantity. The result is a sort of bewildering rabbit-warren of workings, usually none too safe, up and down which one clambers on ladders and timbers affording a slippery and precarious footing or grasp. For explosives the native-made black powder is invariably used. For light, flare lamps are used. These consist of a shallow iron saucer suspended on one end of an iron rod and filled with vegetable oil in which are immersed wicks made from wood pitch."

The pumps used, however, are quite ingenious. They are generally made of bamboo, five inches in diameter, from which the inside rings have been cut out. This forms the pump barrel. The piston is a long strip of bamboo, to the end of which is fixed a leather disc of the same diameter as the bore of the bamboo. This acts as a flap valve and is sealed on a small disc of wood. The pump worker pushes the plunger, and the discharge end of the bamboo delivers the water into a small cistern on which he sits.

Development work is seldom or never undertaken in Chinese mines. Thus a reserve of ore is never created to tide over a rainy season. Hence when a poor zone is encountered, the mine simply has to close down for lack of funds. Practically all work is done on contract, whether mining, hoisting, or ore dressing. The methods of working as well as of control and direction of operation are left entirely to the contractors. It is really rare to find a manager of a mine who will venture underground or who has the necessary knowledge and experience to enable him to assume technical control, etc.

In addition to poor management there is also another factor which retards all progress, and that is superstition. This superstition may either be the belief in "Fêng Shui" (wind and water geomancy), which decrees that certain localities and sacrosanct from shafting other operations, or it may be a belief in the presence of a god controlling all the resources underground. So before a mine is to be opened, this deity must first be worshipped or humored. If by a stroke of good fortune the prospectors succeed in discovering an ore, the success would be ascribed to the favor of the god concerned. On the other hand, should the efforts end in complete failure, or if an accident should occur within the mine, the inhabitants would conclude that the deity is in ill humor or displeased with some of the miners' conduct, etc.

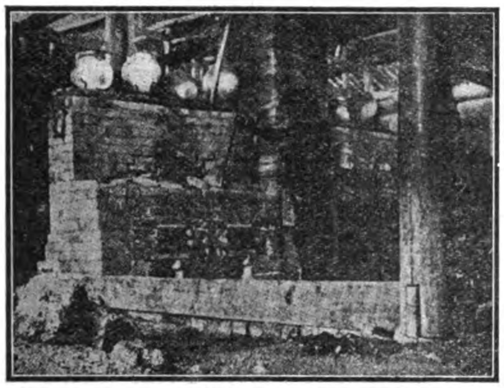
It has to be remembered that Hunan has always been known to be rabidly anti-foreign, and it was only in recent years that the population could be persuaded to accept things foreign or adopt foreign methods.

* See FAR EASTERN REVIEW, September, 1915; October, 1916; December, 1917; June, 1917, page 489, December, 1918.

The Antimony Mines of the Tin Mine Mountain

Hunan is rich in all sorts of metalliferous mines, but by far the most important mineral product and the foremost mining output is antimony. One estimate says that China is the world's chief producer of antimony, yet the production depends almost entirely on one insignificant hill, the Hsi-k'uangshan, or Tin Mine Mountain.

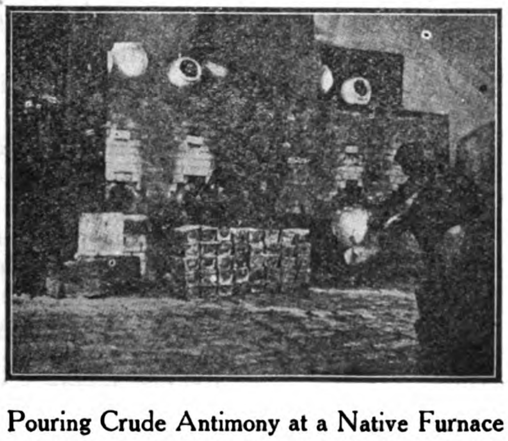
The Tin Mine Mountain, as the natives of the locality call it, is in the district of Hsinhua, in the central part of the province. It is sixty *li* (twenty miles) northeast of the district city. Thirty *li* west of it flows the "Cold Water River," and sixty *li* northeast lies the Lantien Market, on the Lantien Creek, a tributary of the Lien River which empties itself into the Siang River. Therefore the output is transported in two ways: (*a*) from the Cold Water River on to the Tzu River, then on to Yiyang in an easterly direction, and thence to Changsha the capital city of the province, to be refined; or (*b*) from the Lantien Market down the Lien River, and up the Siang River in a northerly direction to Changsha. The former route is by far the longer, but with less land transportation. The latter, however, is shorter, but the land transportation is most difficult, owing to the lack of railways or even good roads. Besides, the country traversed is very mountainous, and the lot of the hard-working porters as they shoulder the ores and plod along in even the mildest part of summer, is far from being enviable. From Yiyang to Changsha the products are towed by steam-boats. The cost of shipping is about 1,200 to 1,800 cash per ton, according to the local currency.



A Native Furnace; Workman Stirring Antimony

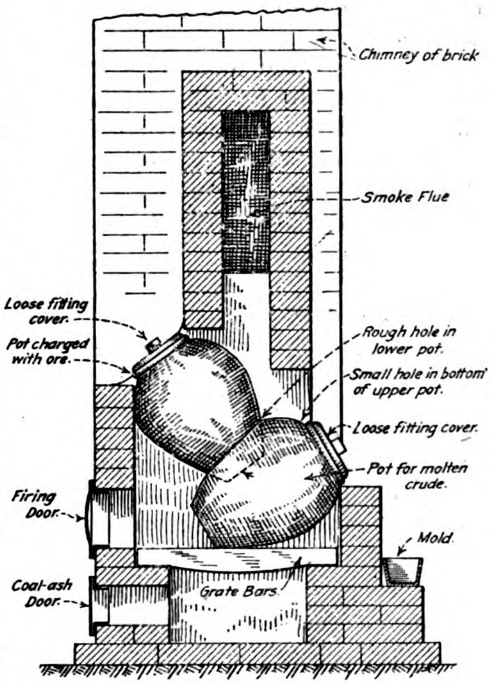
The name of the hill is a strange one and invites questioning. It was so called during the Ming Dynasty (A. D. 1368-1644), because at that time antimony was unknown to the Chinese, who mistook it for tin from its close resemblance thereto. The inhabitants found the ore but were puzzled by the fact that tin could not be extracted from it. The enterprise was therefore not taken up and the precious metal lay dormant for centuries. It was only in 1896, the twenty-first year of Emperor Kuang-hsu, when Viceroy Ch'en Pao-chen of the province memorialised the Throne for the establishment of the official Hunan Mining Bureau, that work was restarted. The people were allowed to work the mines and officials were appointed to buy the ore and put it through metallurgical processes.

Originally the buying price was calculated at 1,400 cash per ton if the ore contained 70 per cent. antimony, or 1,000 cash per ton if the ore contained 50 per cent. antimony. Later, owing to the fixed prices, crude machinery and scarcity of capital, the miners themselves sustained a heavy loss and the industry threatened to come to a standstill after only a few years. Shortly after, however, the provincial government's shares in the business were cancelled and the whole undertaking was placed in the hands of the people. Thenceforth the industry prospered and, in 1914, it took such a tremendous jump that it seemed to take the lead in all mining enterprises in this country.



Pouring Crude Antimony at a Native Furnace

Situated in a big range of mountains, the hill is a low hillock elevated about 200 feet from the plain. The prevailing geological formation here is dolomitic limestone. The ore is scattered among the granity rocks, there is no definite direction, and it penetrates into all fissures of the rocky foundation. Consequently the whole may be denominated as an antimony hill. Above the granite layer is a reef of over a mile in length. In the rocks there is a big cavity which shows clearly the former presence of water which had worn away the dolomite cliff. The stages of formation of the bed can now be only a matter of conjecture, but there is good reason to believe that the ore was precipitated by the ground water which formerly existed. This also explains why there is no deposit in the chalk foundation but entirely in the granite layer. The ore is stibnite, or antimony sulphide partially oxidized in the outcrop zone, and occurs in the form of seams and masses. The whole hill is less than one square *li* in area and only 250 feet in height. But since the source penetrates far and wide, the supply seems at present almost inexhaustible.



Sketch of a Crude Antimony Furnace

As regards the methods employed by the miners, they are very crude indeed. Without any system or any idea of the exact whereabouts of the ore, the miners merely dig at random. Consequently the "pit-holes" make the hill look very much like honeycomb. Altogether there are about 100 companies working on the spot, but none seems to deserve the high-sounding name of a company or corporation. Besides these there are also "unauthorised ore tents." The ore is first bought by the companies from the miners. The crude antimony is sold and used for further refining, while the residue and the ore dust are sold to the tents. The material is then cobbed into small pieces and the stone is separated from the genuine ore. The dust or powder is first sorted by native jigging in baskets and then washed with water on an inclined plane. A rather pure antimony is then left and resold to the companies.

There are seven smelting works on the hill, but only one of these can produce pure antimony or antimony regulus. The others extract only crude antimony for lack of reverberatory furnaces. The ore is put into the smelting pot, the fire is built, and the ore melts. The liquefied ore is then drawn off through a hole at the bottom into another pot. The molten antimony is taken out with long ladles and cast into

ingots of crude antimony. Each row of furnaces (these vary from four to twenty-nine) can produce two tons of antimony every twenty-four hours, but the amount of coal consumed is almost one ton. The smelting is watched by two men who come on duty alternately every six hours, and it is computed that fully 1,000 men are directly employed. The furnaces, however, do not run regularly. Every day almost two-thirds of them are idle, either because there is no ore to extract or because the work is stopped for refining. The annual output is from five to six thousand tons.

Both the antimony regulus and crude antimony are transported to the Wah Chang Company at Changsha, for either smelting or refining. This company was granted the monopoly of the antimony regulus under the Manchu régime. "It owns the French patent rights for China of the Herrenschmidt furnace, which is especially adapted for the treatment of low grade sulphide ore. The process consists briefly in mixing the broken ore with charcoal and heating with regulated admission of air. The sulphide is then converted into oxide which is volatile and is drawn off, and condensed in special chambers. The oxide is then mixed with suitable fluxes and smelted in the ordinary reverberatory furnace. The molten metal is then carried with large ladles into moulds and allowed to cool slowly beneath a covering of slag. This produces the fern-like marks on the surface of the ingot which is held as a sign of freedom from impurities. But, as a matter of fact, it is not necessarily so. Chinese regulus runs from 99 per cent. to 99½ per cent. of metal when compared with the highest grade regulus in the world market."

Antimony ore is also shipped to Europe for treatment. There are many foreign agencies in Changsha directing this business. It is said that works have recently been established by foreign companies in Hankow for the production of antimony crude regulus. Hunan ores are reported to be remarkably free from deleterious impurities, such as lead, copper, arsenic and zinc, etc. The following export figures from Changsha for 1911-1915 are instructive:—

		Regulus.	Crude.	Ore.	Refuse.
1911	... ... piculs	26,309	121,716	8,417	17
1912	... ... „	33,802	90,485	11,424	17
1913	... ... „	35,381	116,155	70,039	105,756
1914	... ... „	45,948	246,585	156,979	42,890
1915	... ... „	97,642	247,443	15,221	83,193

On account of the increasing demand for the metal in the manufacture of munitions of war, and especially as the other producing centres in the world were not in a position to maintain their outputs, the prices soared sky high. In July, 1914, it was only £27 per ton in London, but in December it rose to £55, and in the following June it leaped to £150 per ton. Such soaring of prices literally created a mania for antimony mining in the whole province. Everybody wanted to get rich quick, and one and all dreamed visions of unbounded opulence. A few enterprising individuals reaped monstrously rich returns, though most speculators cursed their luck. But until the arrival of the final crash, such soaring of prices reacted at once on the economic conditions of the mining neighborhood. Nearly every commodity in the district trebled its original price, and rice, which a few years previously fetched about $3 per picul, reached an average of $8 per picul. Even water was sold for five coppers per tub, because water was scanty and the quantity daily consumed by the various companies was enormous. Then the reaction came and the sudden drop in prices proved disastrous for most people. This is borne out by the Customs Trade Report for the port of Changsha for 1916, as follows:—

"The most important local article of export was antimony which, like many other native products, though shipped in the first instance to Hankow, is intended for eventual export abroad. The export of antimony regulus showed an increase of 8,673 piculs as compared with the figures for 1915. There was a decrease in the shipments of crude antimony and ore, but this was probably due to the local smelting which began in 1915. The export of antimony refuse, which requires more skilful handling than rich ores to obtain paying results and can scarcely be worked economically by the local smelting plants, showed an enormous increase, the figures being nearly three times those for 1915. The antimony market opened with a good demand at about 900 Hankow taels per ton for regulus (with proportionate prices for other forms of antimony), and the quotations remained between 800 and 900 taels until the end of April, when the demand suddenly ceased on the flooding of the world's market by the enormous production of Bolivia, and prices dropped to 450 taels at the end of May and 250 taels at the end of July. From that time there was little change, and the year closed with prices varying from 200 to 250 Hankow taels per ton of regulus. In 1914 Bolivia had an output of only 186 tons of antimony ore, but owing to high prices, good demand and rich deposit, this was increased in 1915 to 17,923 tons of ore, at an average percentage of about 60 per cent. metal, which was all taken up. However, when Bolivia further enormously increased its production in 1916, the market was glutted and prices came down with a run. Changsha suffered severely, as no long period contracts had been made; many mines had to be closed, and holders of stocks lost heavily."

Prospects for the future, continued the report, are bad, for, though prices abroad are double those prevailing before the war, the high rates of sterling exchange gave a poor outturn in silver, while the cost of labour for production, transport expenses, etc., have increased very greatly so that little profit is left to the mine-owner. How far the above prognostication is substantiated or qualified is illustrated by the following export figures compiled for the whole of China by the Chinese Maritime Customs, especially as the price of silver has been steadily rising since 1916:—

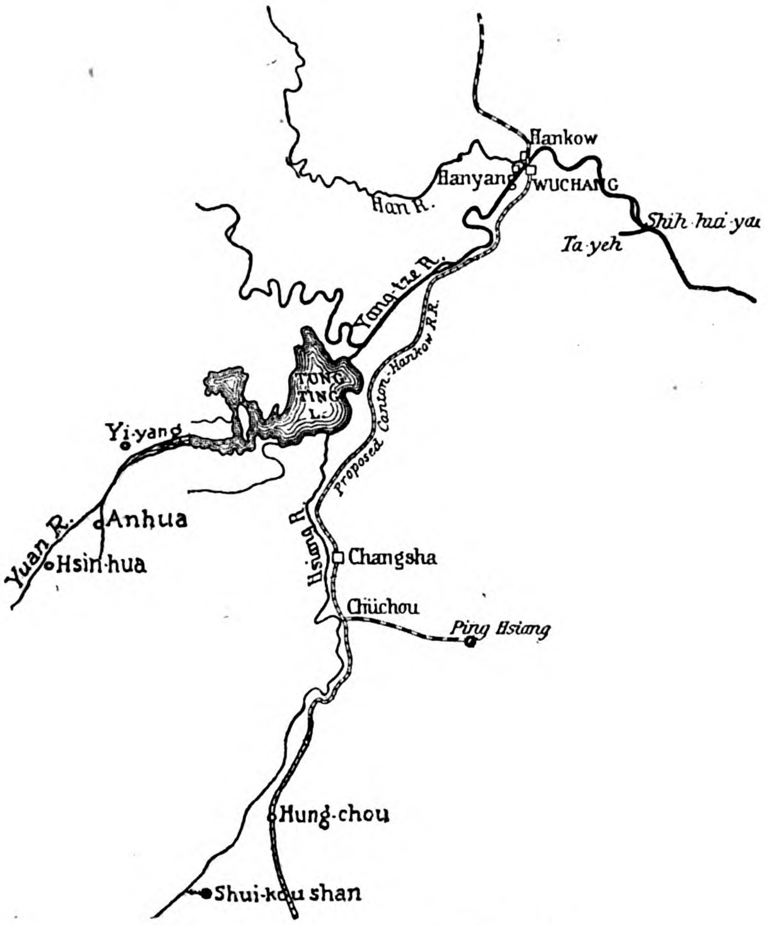
	1916		1917		1918	
	Piculs.	Tls.	Piculs.	Tls.	Piculs.	Tls.
Antimony regulus	173,137	6,912,144	245,068	3,714,321	237,796	2,117,916
Antimony crude	197,965	4,911,359	333,026	2,346,841	28,193	119,820
Antimony ore ...	194,525	1,383,243	63,813	237,702	7,939	21,810

In other words, as the Trade Report for 1917 remarks: "Antimony, regulus and crude, increased by 56 per cent., but the value had declined considerably in consequence of the difficulty of procuring freight and because the European demand was being supplied from Bolivia and elsewhere. The greater part of the export took place earlier in the year." And an analysis of the same trade for 1918 (see FAR EASTERN REVIEW, September, 1919) leads to the following deduction: "Antimony was a war need, and was drawn from China in great quantities before rising prices and high ocean freights on the one hand, and adulteration or poor quality to a slight extent, on the other, made it advisable to make purchases abroad when foreign supplies became available. In 1916, exports of regulus were 173,137 piculs valued at Tls. 6,912,144; of crude 197,965 piculs valued at Tls. 4,911,359; and of ore 194,525 piculs valued at Tls. 1,383,243. What

has befallen the trade since then is graphically shown" by the above-cited figures.

The following extract from the Chinese Maritime Customs Report for 1918 will indicate the present outlook for antimony mining :—

"*Changsha.*—With the enormous demand for antimony regulus during 1918 came the setting up of a considerable number of small and cheap native 'plants' for smelting purposes. They consist of a coke-kiln fire which collects the fumes in claybuilt chambers, draught being supplied by hand-driven fans through wooden ventilators. The production per furnace as compared with that of the steam power driven plants, with cast iron collecting chambers, is exceedingly small, but the competition of these native "plants" in production cannot be overlooked when it is realized that they cost next to nothing to erect and how cheaply they can be worked by coolie labor. Towards the end of 1918 only the richest of the antimony mines were able to work, and this at a loss, for the price of antimony declined rapidly with the advent of the termination of hostilities in Europe, when regulus was offering at Hankow Tls. 60 per ton. This represents one-twentieth of the metal easily obtainable in 1915, one-fifteenth that in 1916, and one-fifth that in 1917."



Map showing Location of Shuik'oushan

As usual, owing to lack of organization and ignorance on the part of the miners, the sanitary conditions of the Tin Mine Mountain are most unsatisfactory. Thousands of diggers live huddled together in tents or wigwams, around which were huge heaps of refuse and waste products. No scavenger could be found. Every one was busy picking up antimony ore in order to bargain with the mining companies. The latter likewise were too busy with money-making to care about the health or living conditions of their workmen. It is said that one could smell the foul air and bad odour even a mile away!

In addition to Hsinhua, deposits of antimony have also recently been discovered in the districts of Anhua, Yiyang and Yuanlin, etc. The output from these mines is comparatively small, the average per month ranging from 50 to 300 tons.

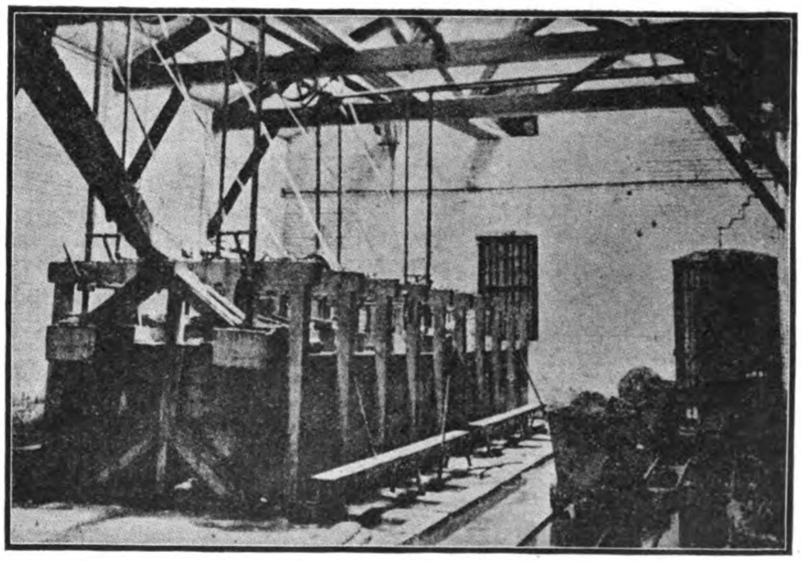
The Lead and Zinc Mine of Shuik'oushan

Unlike all other mines in the province, the lead and zinc mine of Shuik'oushan (Water Mouth Mountain) is run on foreign lines, and is probably the largest of its kind in all China. It is located in southern Hunan, in the district of Ch'angning, about 45 miles southwest of Hengchowfu, and on the south or left bank of the Siang River. About 10 *li* from the mine is a rural market called, literally, the Cyprus Village. The vicinity is rather a level place, the highest part of the hill being about 200 feet above the surrounding plain. The mine produces galena and zinc blende as well as a less valuable by-product, iron pyrites, which can be used for making sulphuric acid or extracting sulphur.

Historically the mine dates back to the Ming Dynasty, like the Tin Mine Mountain—an assertion which is amply demonstrated by the numerous deserted pits scattered around the region. It is said that at the end of that dynasty the mining industry was at its highest stage of development. Thousands of workmen were employed and the Cyprus Village was busier than it is to-day. As a consequence, however, of the shortage of capital but especially of the disorders and rebellions which reigned towards the end of that period, the various companies ceased all work.

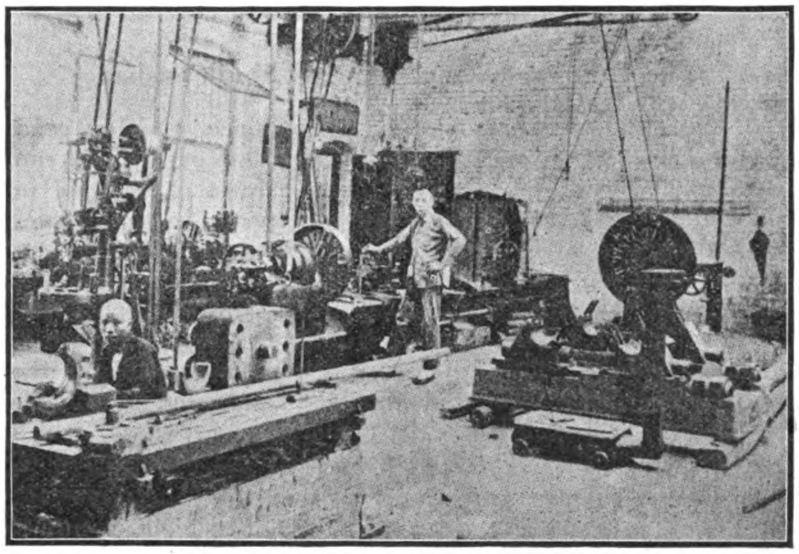
The principal ores of the mine are zinc-blende and galena. These exist in big troughs of rocks. The biggest bed is about 1,200 c.m. in capacity—a rare treasure of its kind. The best specimen of galena contains 73.3 per cent. of lead, 4.7 per cent. of zinc and 929 grams of silver per ton. The zinc-blende contains 23 per cent. lead, 53.4 per cent. of zinc and 160 grams of silver per ton. Such abundance of ore combined with such richness of valuable metals at once makes the mine a first-rate source of revenue for the province.

As in the case of the Tin Mine Mountain, it was only in 1895-1896 that the provincial government became aware of its importance. An official was appointed to take charge of the undertaking and Tls. 30,000 was appropriated for its improvement. The area within 100 *li* radius of Shuik'oushan was chartered as the privileged district for government



Jigs in Concentration Plant

mining. The people were free to live therein but were precluded from starting private mining. As the official appointed was conservative the usual crude native methods



The Machine Shop

were employed. Yet the ore was reached after a few months' digging and, despite the absence of modern machinery, netted highly creditable results. The output was doubled the following year and then jumped to seven times as much at the end of the third year.

In 1907, the Government decided to introduce modern equipment, and machinery was bought and shipped to the spot from Europe. Owing to the irregularity of earlier mining, the work was at this stage much handicapped. For example, places where a vertical cut is desirable are forced to have a sloping shaft. Nevertheless, in spite of these and other similar inconveniences, the output has increased from 10,000 tons at the time of modernization to a production now reaching more than 20,000 tons. The following table shows the annual output and expenditure from 1896-1914 :—

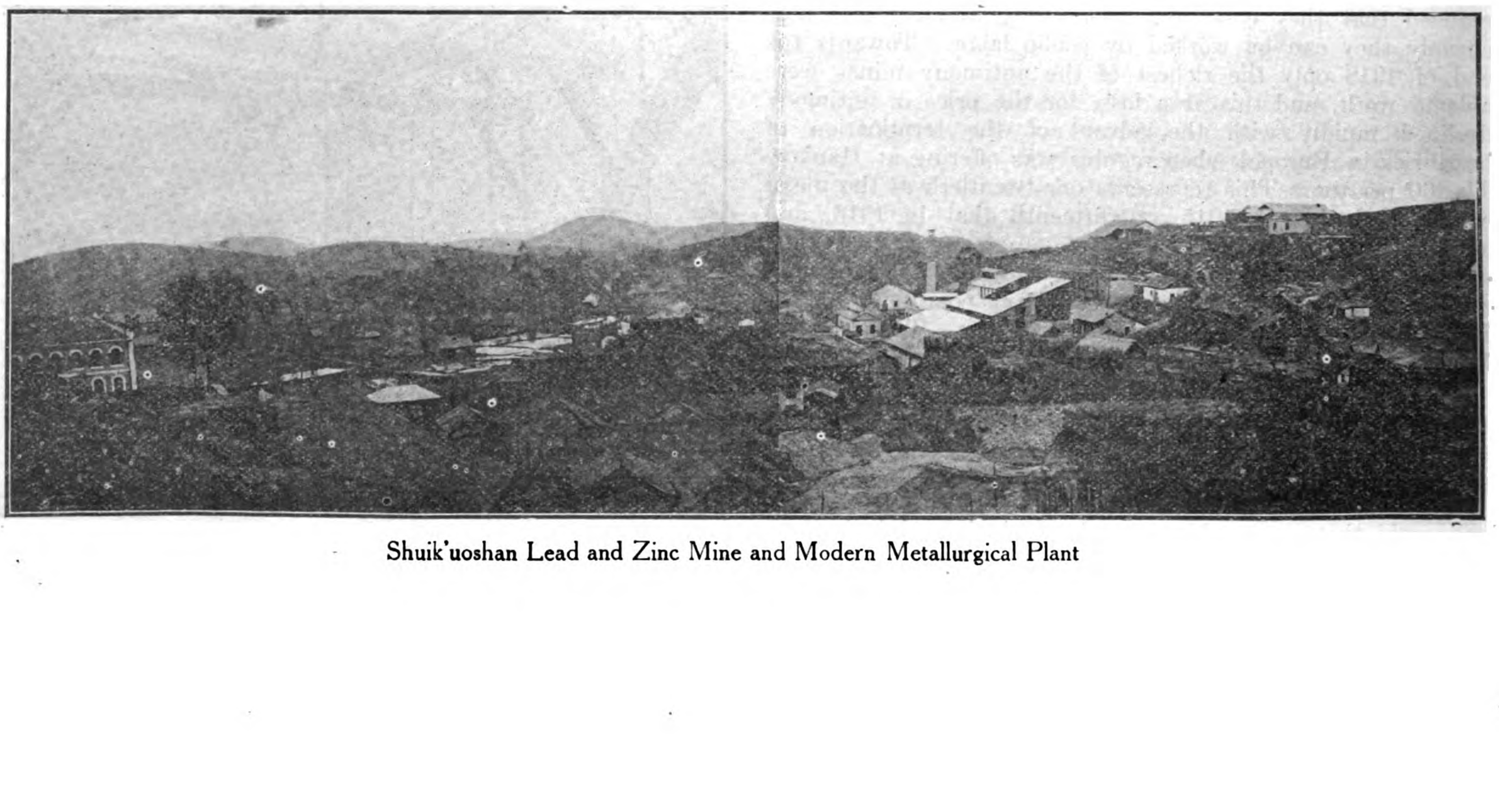
Year.		Zinc-blende.	Galena.	Iron Pyrites.	Total Annual Expenditures.
1896	...	527 tons	230 tons	212 tons	Tls. 31,597
1897	...	196 ,,	1,285 ,,	45 ,,	,, 32,857
1898	...	3,675 ,,	1,884 ,,	103 ,,	,, 33,964
1899	...	4,571 ,,	3,036 ,,	104 ,,	,, 47,737
1900	...	5,822 ,,	2,791 ,,	205 ,,	,, 54,239
1901	...	4,806 tons	2,260 tons	216 tons	Tls. 57,412
1902	...	5,721 ,,	3,627 ,,	252 ,,	,, 56,802
1903	...	5,309 ,,	3,670 ,,	885 ,,	,, 70,237
1904	...	5,558 ,,	2,342 ,,	58 ,,	,, 66,172
1905	...	5,178 ,,	2,079 ,,	59 ,,	,, 79,115
1906	...	6,662 ,,	1,792 ,,	47 ,,	,, 106,034
1907	...	10,011 ,,	2,910 ,,	34 ,,	,, 109,576
1908	...	8,124 ,,	3,088 ,,	39 ,,	,, 106,865
1909	...	8,483 ,,	2,553 ,,	83 ,,	,, 116,122
1910	...	7,787 ,,	2,527 ,,	44 ,,	,, 118,068
1911	...	9,498 ,,	4,035 ,,	97 ,,	,, 144,826
1912	...	9,444 ,,	2,987 ,,	339 ,,	,, 206,848
1913	...	10,319 ,,	3,148 ,,	182 ,,	,, 498,892
1914	...	17,454 ,,	5,777 ,,	50 ,,	,, 496,999
Total	...	129,454 tons	51,316 tons	2,354 tons	Tls. 2,333,362

For 1915 the following figures indicate the monthly output for the first seven months :—

		Galena.	Zinc-blende.	Monthly output Total.
January	... ...	738.0 tons	2,040.6 tons	2,778.6 tons
February	... ...	727.2 ,,	1,867.6 ,,	2,594.8 ,,
March	... ...	217.5 ,,	2,025.8 ,,	2,243.3 ,,
April	... ...	042.1 ,,	3,634.1 ,,	3,676.2 ,,
May	... ...	1,114.4 ,,	2,061.9 ,,	3,176.3 ,,
June	... ...	849.9 ,,	2,376.3 ,,	3,217.2 ,,
July	... ...	1,000.9 ,,	2,005.2 ,,	3,014.1 ,,
Total	... ...	6,587.0 tons	15,032.5 tons	21,615.5 tons

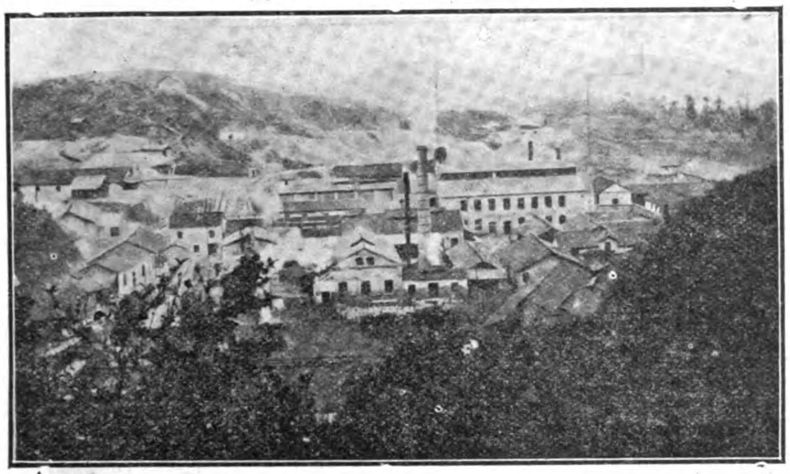
That is to say, the prospects of the lead and zinc mine are promisingly bright. In 1914, the total output amounted to 23,231 tons as compared with 13,483 tons in the previous year, the expenditure being about the same in both years. This is because, in 1913, a special fund was invested for renewing as well as increasing the machinery. Since the establishment of the official Mining Bureau in 1896 to 1914, a total of over two million taels was expended. But the money had been well spent. For in addition to 2,300 tons of iron pyrites, a total of 180,000 tons (in round numbers) had been mined. If we put the average price during 19 years at 20 taels per ton, the value is already Tls. 3,600,000 —in other words, a profit of over one-and-a-quarter million taels.

After the outbreak of hostilities in Europe all articles that could be used in war rose tremendously in value, especially lead, zinc, copper and iron. Before August, 1914 lead was worth $10-20 per ton; twelve or eighteen months later it jumped to over $100 per ton. The Shuik'oushan mines, it would be suspected, must have profited enormously from



Shuik'uoshan Lead and Zinc Mine and Modern Metallurgical Plant

this golden opportunity. As a matter of fact, however, the reverse is the truth, owing to the one-sided agreement made between the Manchu government and Carlowitz & Company (a German firm). The contract provided that the mines should supply the German company with 100,000 tons of



Shuik'oushan Mine, power plant and Workshops

lead and zinc ores at the price of $20 per ton, all fluctuations in the market value notwithstanding. Moreover, until the contracted quantity had been delivered, the mining company could not carry on any other kind of enterprise. These stipulations virtually made the provincial government a contractor for the Germans, and under the circumstances, enormous losses sustained by the mining company can well be appreciated.

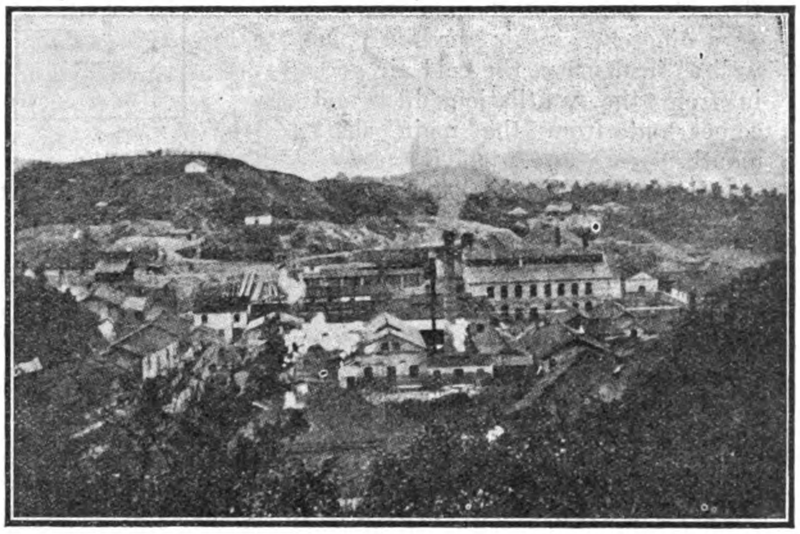
According to the "Technical Magazine" of the Hunan Mining Bureau of October 31st, 1919, the daily output is now 20 tons of lead, 40 tons of zinc, or approximately 150 tons of ore and dust, etc. The price of zinc is ten taels per ton and that of lead, forty taels per ton. The total number of workmen employed is between five and six thousand. Owing to the recent fighting between the North and South in the province which seriously unsettled the available markets, there has been very small demand and, in consequence, the company has sustained a loss of over $100,000. Much of the machinery requires immediate renewal, but there are no surplus funds for the purpose. At present the concern is exercising the strictest economy and, wherever possible, the men would only work half-time. The company itself has a police force of over 80 men, and in addition there is the protection afforded by a battalion of soldiers from the Third Division of Chihli troops who are quartered in the

View showing the New Mill at Shuik'oushan

Cypress Village. The locality is calm and peaceful, but business is very slack, and such pleasure resorts as tea-houses and "flower-boats" have already long disappeared.

The Mine Workings

Until 1914 there was only one cut, so the output was limited; but in the winter of that year another shaft was made, connecting all the horizontal pits of the first cut, so as to increase the haulage. The first shaft is a slanting cut, forming an angle of 51 degrees with the water level. For years the whole mine depended upon it, so it has grown to be 192 meters deep, with six horizontal cuts branching out from it. The longest and most productive of these cuts is No. 4, which is 390m. long; the shortest is No. 5, which is only 41m. long. At the mouth of shaft is a headgear with a hoisting machine of 50 H.P. This reaches down from the surface of the ground to the fourth horizontal cut, and at its best it can haul a load of two tons, forty times per hour. Theoretically it can raise 400 tons of ores, but in practice the time required by the workmen for their rest must be taken into consideration and so, on an average, its capacity is only 100 tons. For the fifth and sixth cuts there is a smaller hauling engine.



View of the Power House and Main Incline Shaft, at Shuik'oushan

The mining method adopted here is what is called "overhand and underhand stoping." After a layer of the ore is exhausted, the abandoned cavity is filled up and the cut is continued into a new stratum. Formerly, before the introduction of modern methods, the cuts were irregular and the exhausted cuts were not properly filled up. These resulted in numerous impediments and sometimes even accidents.

In the first shaft there are about 600 miners. These work eight hours a day, one-third being employed in digging and cutting the ore, and the rest in hauling, etc. The men are mostly good stone masons, and cutting through 4 c.m. of chalcocite rock, limestone or granite will bring in $34 as wages per month. The explosives, lamp and oil, etc., are not provided by the company, each miner having to procure his own. The engineering department only supplies them with the necessary tools, such as wedges, hammers, and drills, etc. The men organize themselves into groups of five or six, with one leader who is responsible for all transactions with the Mining Bureau. The stoutest fellow receives a wage of 40 to 50 cents "small money" per day, but the average gets about 30 cents. The explosive used is the ordinary gun-powder manufactured by the Bureau itself. It can be had at a price of $1 for eight catties.

The horizontal cuts are each 2m. in height, and as already mentioned their lengths vary from 41m. to 390m. The vertical distances between them are generally 20-25m. apart. The main shaft reaches only to the fourth cut. The fifth and sixth cuts have a different outlet above.

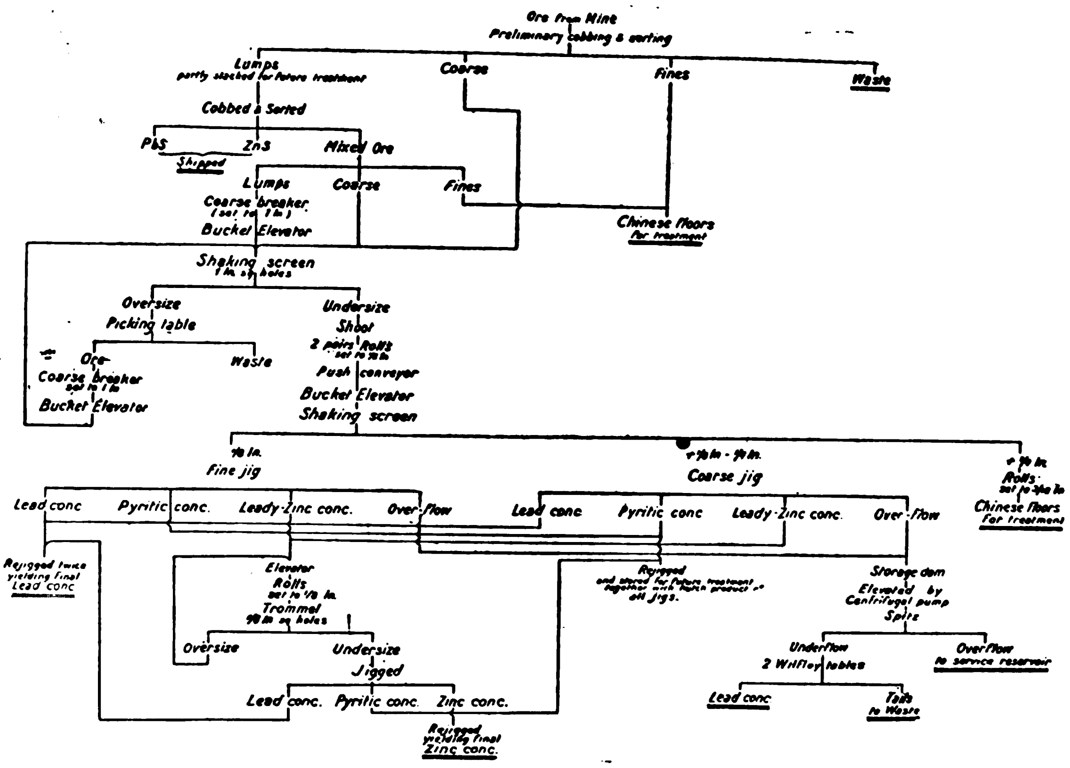
Timbering is seldom used, because of the hardness of the chalcocite foundation. But there are also soft points which require artificial supports. These usually consist of pine wood six inches in diameter, which mostly comes from the upper region of the Siang River where timber is cheap.

As for ventilation the excavated cuts usually serve the purpose admirably. Altogether there are two of these—one leading from the surface to the fourth cut, and the other from the latter to the sixth cut. These ventilation cuts are all sloping. The outlet is 50-ft. lower than the mouth of the main shaft. By a difference in air pressure as well as in density, the cold air goes in from the ventilation duct and comes out from the main shaft mouth.

From the first to the fourth horizontal cut water does not cause any trouble, but the fifth and sixth are full of water. For this purpose there are six pumping engines three in the first cut, two in the fourth, and one in the sixth. These pumps are operated by steam power, the capacity of each being 200 gallons per hour. The steam is conducted through iron pipes from the boiler on the surface ground.

In the underground workings all machinery emplacements and inclined shafts are provided with electric lights. For actual work, however, each man has to provide his own bamboo lamp filled with vegetable oil—a harmless enough means of illumination, since there are no inflammable gases in the mine to cause explosion, etc.

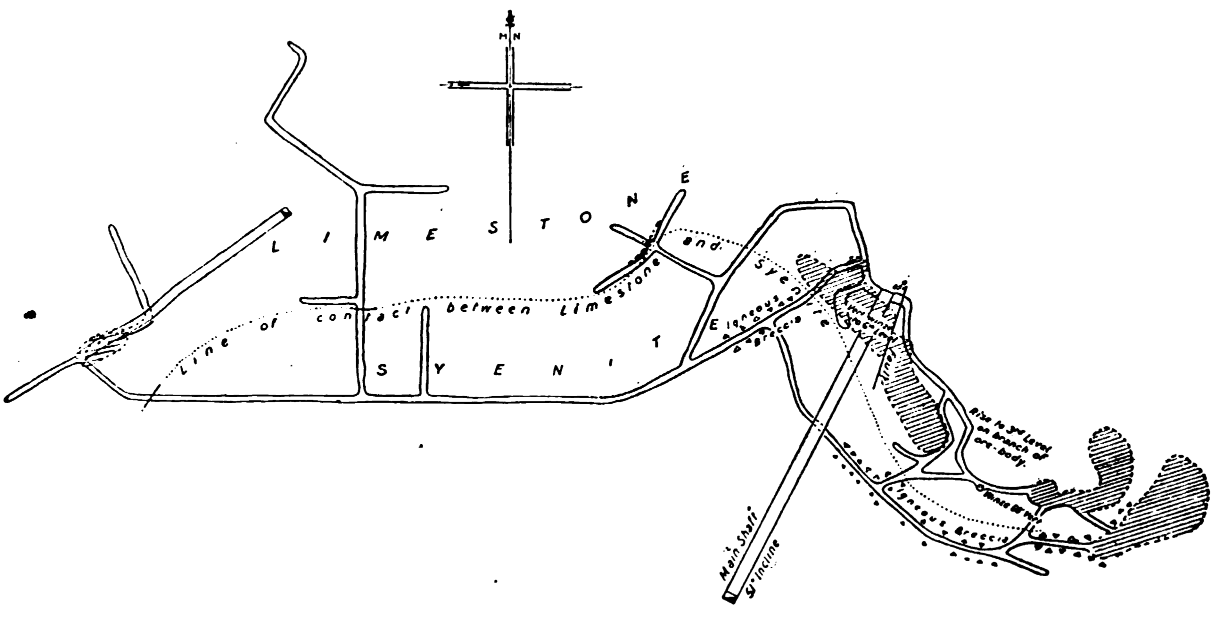
In case of death from mining accidents the Bureau will grant an allowance of $30 to the deceased's family, whereas if he is wounded or disabled temporarily, an allowance of 15 cents a day will be given him until his complete recovery. But in every case the leader of the group must first report the matter to the director who will investigate into the case before granting the subsidy.



Flow-Sheet at the Modern Dressing-Plant at Shuik'oushan Mine

The second or new shaft is 500-ft. apart from the first or old one, and is almost vertical. In 1913 the work commenced. The mouth of the shaft is 2½ by 2 meters. It is divided into three parts—one for the elevators to travel, another for the steam and water pipes, and still another for the miners to work in. Some 19-ft. from the shaft entrance is a hoisting engine of 15 H.P. In addition there are also a boiler, a mechanical ventilator and pump. The boiler is situated on the surface ground and, giving a steam-pressure of 65-lb. per square inch, furnishes the power for the hoisting engine, pump and ventilating fan of this shaft. When the hoisting engine is worked to its highest speed, it can ascend three feet per second.

In addition to these two shafts there are the Hsinch'ung pit and the Lungwangshan (Dragon King Hill) mine. The former is only one *li* distant from the first shaft and is worked by purely native methods, the pumping, haulage, and artificial ventilation, etc., being entirely done by hand by lads of sixteen or so years of age. The latter is three *li* from the Shuik'oushan and is where the first outcroppings of the ore were found.



Plan of the Fourth Level, showing the Geological Features and Orebodies

The mines have four sorting plants—two being equipped with modern machinery—and also washing plants. The two that use hand labor are ore-crushing and sorting plants. The crude ore is first hauled to the surface, passing through the ore-crushing plant. The men hammer the ore and put it into different baskets so as to separate the useful product from the waste, and the more valuable from the less valuable. The waste, such as sand and rocks, is rejected and very pure high-grade concentrates of the lead and zinc are transported to the store-house of the station. The less pure portion is carried to the washing plant where mechanical sorting is employed. After this mechanical process, it undergoes another manual selection in the sorting plant.

The ore is hauled up by an elevator to the working place. By a revolving table it is fed into a breaker where it is crushed. Then it is carried into a Harz Jig. The particles smaller than one-fiftieth part of an inch are carried away to the sorting plant. The bigger ones pass through an elevator into another jig of greater meshes. The coarse particles are again put into a roller breaker. Then it is propelled by a carriage into another elevator, and then into another spray jig. The coarse particles left behind are crushed again and then carried to the sorting plant. Those smaller than one-eighth to one-fourth of an inch in diameter are put into the first row of sieves to be washed, and then into the second row. The fine concentrates are washed only by their difference in specific gravity. The substance is then transported to the store-house. The impure ore left behind goes through another breaker and thereafter to the store-house also.

The plant has two steam engines—one of 120 H.P. and another of 30 H.P. The steam is generated by four boilers. The machinery used, therefore, consists of hoisting engines, elevators, revolving table, power-jig, ore-breaker, ore-classifier, car, pump, centrifugal pump, sieves, steam-engine, boilers, Wilfley table settling tank, wooden troughs, etc. Owing to the increase in output, a new plant has been set up. It is of six stories and provided with two steam engines, six Wilfley tables, two jaw breakers, three crushing rollers, four elevators and one power-jig.

There are two crushing plants and the work done is entirely by hand. The men separate the various kinds of ore according to their specific gravity, color, hardness and fracture. The trailing is sent to the store-house, whilst the finer but lower-grade ore is sent to the washing plant. This sort of work is done by the job, and by boys of ten years or more of age. The wages, therefore, vary not with the amount of time but with the amount of work involved. The amount of ore to be sorted by each person is at least 65 catties and the wage therefor is 25 cash only! With an increase of every additional catty the wage is increased also by one cash, but if the increase be over 125 catties a special reward is given. These sorters work ten hours a day—from 6.30 a.m. to 12 noon and again from 1 to 5.30 p.m.—but their food is supplied by the Bureau. Thus taking it all together, each ton of ore costs approximately $2 in hand sorting.

Chinese Method of Concentrating Galena by Washing Gangue away from the Crushed Ore

Manual labor is also found in the classifying plant, where the method of working is said to have been originated by the natives. The crushed ore is first put into a bamboo sieve (5 inches deep, 1.6 in. in diameter) of fine meshes and this, together with the sieve, is placed into a wooden tub full of water. The sieve is then shaken, when the particles will settle and arrange themselves in layers according to their respective specific gravity. Lead will be found at the bottom layer, then iron pyrites, then zinc, etc. The various layers are then taken off and separated.

For this purpose there is also another method. A slope or inclined plane is built with fire bricks, with two walls on each side and a pit in front (8 in. wide and 30 in. long.) A big water trough is then placed on top of the slope, and the ore is placed along the plane. The stop-cocks of the trough are removed and jets of water play against the slope, the particles being stirred with a bamboo stick. The ore is then washed down and settles in the pit in layers, as usual. But this method requires a longer time than the former method.

The mine has five workshops—the blacksmith shop, the machine shop, the manufacturing plant, the carpenter's shop, and the testing laboratory. The first supplies small and simple tools, such as drills and hammers, etc. It is, however dependent upon the other plants, doing chiefly the work of welding, polishing and repairing, but all by hand. It has three blast furnaces. The number of men in this establishment is 26, but in times of special need it may be increased to 40. The men are paid according to their skill and kind of work: the maximum wage is $33 while the minimum is $6 per month. The hours per day are 10.

The manufacturing plant is unpretentious, having two puddling furnaces, one blast furnace, one Siemens-Martin furnace and one elevator, which seem to be adequate for its present needs. Castings up to one ton weight are turned out, and steam engines and pumps are made.

The machine shop has altogether only six lathes, three planers, four drilling machines, one air-pressure engine, and also one 32 H.P. steam-engine for starting other machines. Usually there are 40 workmen, but in case of necessity this number may be increased to 60. Their wages differ according to the grade of work—from $5 up to $40 per month. Like all the others, these also work 10 hours a day.

The carpenter's shop supplies and makes all the wooden frames as well as models for mining. There being very little work to do here, it has only four men. Their wages vary from $4 to $34 per month.

The testing laboratory was only recently established. Though small, it analyses not only minerals for the Shuik'oushan but also those of other mines along the upper portion of the Siang River.

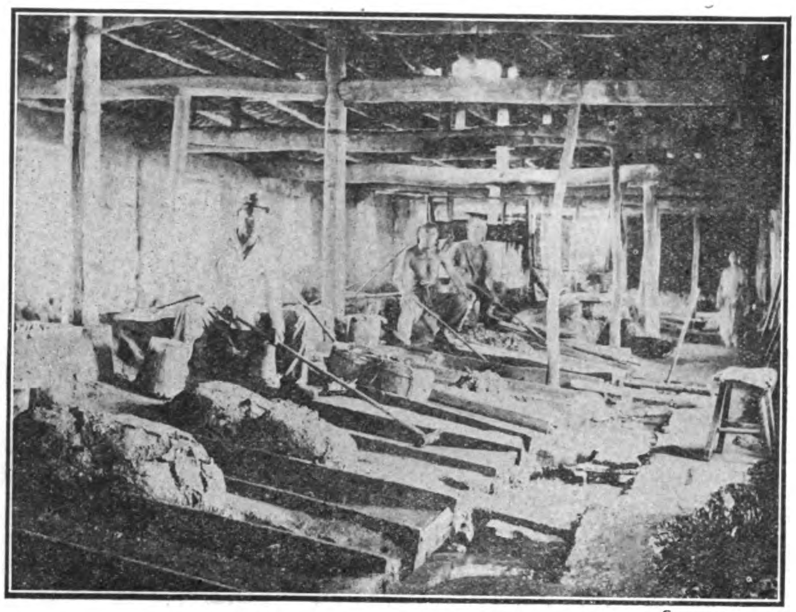
Owing to the lack of good roads the problem of transportation was always a source of anxiety. In 1912, however, a light railway connecting the Shuik'oushan and the Cypress Village was constructed, at an expenditure of $50,000. It is only 13 *li* in length and the journey occupies half-an-hour. Formerly each picul of ore cost 15 coppers to transport by

human labor from the mine to the village, but with the advent of the railway the cost has been reduced to 7 coppers per picul, not to speak of the saving of time, etc. The power of the locomotive being limited, it runs only five times a day, carrying 100 tons of ore daily to the Cypress Village. Thence to Changsha the ore is transported by sailing vessels or Chinese junks, since the river is too shallow for the steamboats to go as far as the Village. Later, when the Canton-Hankow line, which is to pass through this district, is completed, tht means of transportation will, of course, be greatly facilitated.

Tin Mining

The tin fields of Hunan are mostly situated in the southern portion of the province, close to the border of Kwangtung. The Anyuan mines in the district of Ichang produce perhaps the greatest output. The deposit here is of an exceptional nature and is said to occur only in three or four places in the world. The formation is of limestone insulated by granite mass. Along the granite dyke tin ore is found in abundance, although associated with arsenic pyrites, copper pyrites and fluorspar.

The ore is treated by cobbing and sorting. The clean arsenic is stocked for separate treatment. The balance is then roasted and the arsenic oxide is collected by condensation in dome-shaped chambers built of rough stone and plastered with clay inside. Then the oxide is poured into a thin iron basin or pan which is covered with a similar basin inverted, and subjected to intense heating. Thus the arsenic oxide will deposit on the upper basin. The roasted ore is first crushed by water-driven Chinese stamps and then undergoes a series of concentrations. The first of these is effected by raking the ore from side to side in a shallow stone pit into which water is constantly flowing. It is then concentrated by repeated washings down a concave-shaped inclined plane.



Chinese Dressing-Floors—Sluicing Down Boards for Concentrating

After the process of concentration the ore is put into the furnace for smelting. The furnace is built of stone and plastered with clay. The necessary blast is supplied by a pair of double acting Chinese bellows through a two-inch opening pointing downwards from the back of the furnace. The furnace door is stopped up with clay and a layer of live charcoal is placed on the furnace bottom and blown up to a good heat. About 50 catties of concentrates mixed with incense wood are charged in and covered with a layer of charcoal. The smelting occupies 24 hours, new charges and fuel being added half hourly. Shortly after starting, an iron rod is inserted into the clay furnace door so as to make a hole for the molten tin to flow out. The molten tin trickles out slowly into a clay vessel which is kept hot by live charcoal. Then it is cast into ingots of about 45 catties each, and the metal thus obtained contains over 99 per cent. tin.

In addition to Anyuan, tin mines are also found in both the north and west of the district of Lingwu, 50 *li* from its city. The latter, in the district of Kianghua, extends into the provinces of Kwangtung and Kwangsi. The ore here is associated with tourmaline and arsenic pyrites. When smelted, it runs from 50 per cent. to 70 per cent. tin. As the ore is very rich, its annual output is said to be greater than even that of Anyuan.

Gold Mining

There are several gold mines in Hunan. But the principal and most remunerative one of these is in the district of Pingkiang, near the Kiangsi border. It is about 30 *li* from Changsha. Although the concern is controlled by the official Mining Bureau, there are many small private workings on the hill sides. Most of these, however, have now abandoned their attempts as a result of either lack of funds or inability to fight the floods.

The principal mine is the Ching Tang (Gold Pond Mine), which has been worked to a depth of 650-ft. The enterprise is not run on the contract basis, but the miners are paid 214 cash per eight-hour shift and all tools as well as explosives are supplied by the company. The pump workers and ore carriers are, however, paid 164 cash per shift.

The process of treating the ore is first cobbing and then sorting. The sorted ore is put into a stamp mill, built like the Chinese rice mill, and then crushed by man-power. After crushing it is washed over two sets of riffle tables several times. The concentrates thus obtained are smelted into ingots of about 12 ounces in weight. The residue is ground in a small trough in which an iron disc is rotated back and forth by rolling the axle with human feet. The Chingtang mine has its own dressing floors. The official returns for the closing month of 1914 show that the grade of the sorted ore was about .75-oz. gold per ton and that the output averaged about 120-oz. gold per month of a fineness of about 920th per 1,000.

Other gold mines exist at Hsiuhsienp'o, forty *li* north of the village of Taifu (Great Wealth), in the district of T'aoyuan; at Liulinchiao, 20 *li* from Shenchowfu; and at Yutung, in the southwestern part of the province. But the output is rather meagre.

Quicksilver Mining

Quicksilver occurs in the west of Hunan, in the district of Fenghuangt'ing, on the border of Kweichow. The field spans the border of the two provinces. It was probably first opened several centuries ago, as the old waste and underground shafts seem to indicate. At present only two mines —the Wangtseping and the Tatungan—are in operation. The formation here is generally of dolomite or magnesian limestone. The ore is cinnabar or mercuric sulphide. The deposit is confined generally to a layer of dolomite ranging up to 6-ft. in thickness, though the cinnabar, associated somewhat with carbonic matter, occurs in small patches.

The picked ore is crushed by hand and then put into a pan and subjected to intense heating. Thus the cinnabar can be extracted. After extraction it is sold, according to the grade which is estimated by the eye, directly to buyers coming from Tungjen district, in Kweichow. The market price varies from 110 to 170 strings of copper cash per picul.

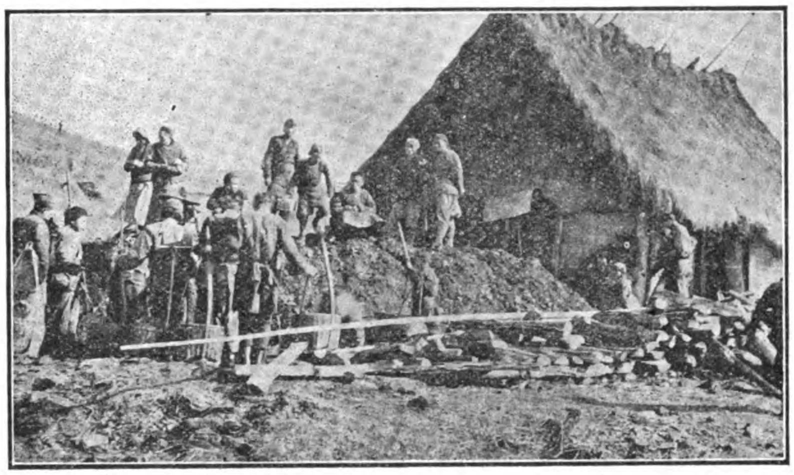
The poorer ore and the residue after panning are retorted for their quicksilver content. The retort consists of a thin iron basin about 30-in. in diameter, supported on stone pedestals. Two others from which the bottoms have been burnt out, are fitted into each other and placed on the lower basin. Then the uppermost vessel or basin is covered with a thin iron plate leaving a circular opening of about 12-in., and on this is placed an earthenware pot upside down. The crushed ore is placed into the lower basin. A circular channel of clay is moulded around the top basin to communicate with the interior of the retort by means of the three holes. When the ore is heated, the cinnabar separates into mercury and sulphur dioxide. The fumes of the mercury rise up and partly condense in the earthenware pot and partly pass through the three holes into the clay channel. Therefore the clay channel is the collecting ring. It is sold together with its contents to the company or merchants in order to defray the cost of furnace, basins, pots, etc. The amount so collected is stated to vary from 12½ to 15 per cent. of the total distillate.

Sulphur Mining

There are several sulphur mines in Hunan, all run on primitive methods. The most prosperous ones occur in Ant'oushan, in the district of Sianghsiang, southwest of Changsha, and in Shuik'oushan, in the district of Tzeli, northwest of Changtehfu.

The sulphur is obtained by the destructive distillation of iron pyrites. The ore is first put into what are called sulphur pots. The pots are then arranged in an orderly manner in brick furnace and subjected to intense heating. The red hot coal is covered with a layer of coal ash. When the fire is burning fiercely, water is poured in from the top of the furnace, filling the pots half full of water. When the fire goes out, the furnace is destroyed and the pots are removed. By removing the clay on the brim of the pots, pure sulphur is obtained. The entire process requires one whole day.

The sulphur is generally iron sulphide. When the ore is heated, chemical action takes place and a part of the sulphur is set free.



A Native Coal Mine in Hunan near Paoking. The Shaft is Covered by the Thatched Shed

Coal Mining

Hunan is also very rich in coal. It is said by experts that its deposit is second only to that of Shansi in quantity, and especially is coal abundant in the southern and central portions of the province. Owing to lack of capital, and partly also owing to the quality of the coal, no mine has been operated so far on a large scale. It seems that, until last year, no anthracite was discovered; hence the anthracite of the Pinghsiang coal mines, across the border in Kiangsi, comes in to supply the factories, etc., at Changsha and other manufacturing centres. The various small mining companies combined produced in 1916 an output of 932,000 tons.

According to Richthofen the whole of the southeastern part of the province may not be unjustly called one vast coal-field, although the coal formation is far from forming the surface rocks uninterruptedly: "It extends, according to the information I gathered in addition to my own observations, from the northern slope of the Nanling to near Siangtan—that is, through upwards of two degrees of latitude and about the same of longitude. The total area comprises about 16,200 geographical or 21,700 statute square miles. But unfortunately a great portion of its area, probably more than one-half of it, is covered by those sediments of many thousand feet certainly in thickness as being more recent in age than the coal formation, while a small proportion of it only is occupied by the more ancient rocks. Yet the coal measures themselves are invisible in extensive regions. The stratification is ordinarily much disturbed, a fact which has in many localities influenced disadvantageously the position and quality of the coal beds."

Last year (see the FAR EASTERN REVIEW, October, 1918) a new coal mining company was organized under the auspices of the present Tuchun, General Chang Chin-yao, of the province, with a capital of four million dollars. It is a joint official and mercantile concern and will undertake the development of the coal fields of Ningsiang, northwest of Changsha, and Tsingchi. It has been known for some time that these two districts are very rich in coal deposits, but the natives use antiquated mining methods. Especially rich is the tract at Shuangssuling or Double Lion Ridge, covering an area of 30 square *li*. These fields are now reputed to produce excellent anthracite coal which is said to be unsurpassed in the whole Yangtze Valley.

Other Minerals

Manganese is mined by the Hanyang Iron Works Co. for smelting with their iron ore. Graphite and alum is also mined, as well as tungsten. The latter, up to the signing of the armistice, was disposed of at prices ranging from $1,000 to $1,300 per ton. It fell to $700 per ton with no buyers and since then production has virtually ceased.

Forbes Perkins Co. to Handle Foreign Trade

All branches of foreign trade, including banking, railroading, exporting, importing and mining will be handled by the Forbes Perkins Co., which was formed with $1,500,000 capital under an agreement dated October 8, 1919, by W. Cameron Forbes, ex-governor of the Philippine Islands; Charles E. Perkins, president of the Chicago, Burlington & Quincy Railroad; and John F. Perkins, treasurer of Calumet & Hecla Mining Co. The company, which has opened offices in New York at 120 Liberty street, will act as purchasing agents for a score or more of foreign railroads, mostly in South America. It is planned to obtain control of factories here and in South America. For the present the company's business will be chiefly in South America and China. The stock has been subscribed by a few men, whose names, other than the incorporators, could not be learned. The enterprise is being financed by private capital, it was stated, however, and is not backed by any banks, railroads or other corporations directly.

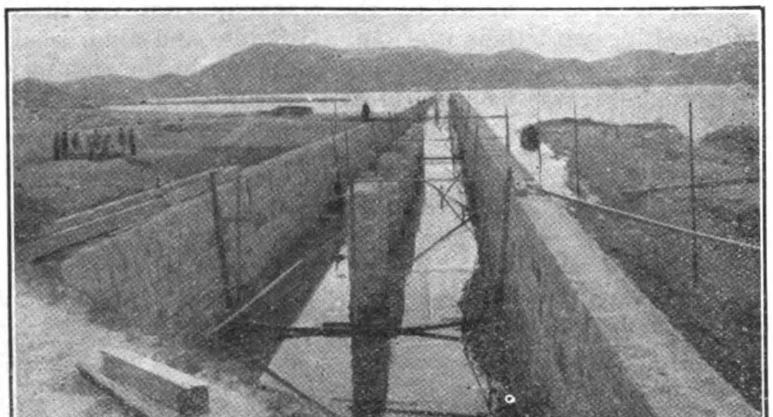
Reclamation in Hongkong

(From Our Hongkong Correspondent)

THE most important question demanding solution in the Colony of Hongkong is that connected with housing. The steady growth of the Colony's population—a growth which has gone on since the early days of the British occupation—and the limited area of land available on the island of Hongkong, have created conditions which have caused severe hardships to those who wish to set up homes and businesses.

There has always been a scarcity of level land in the Colony, and this scarcity has made it necessary for a large amount of reclamation to be done. As early as 1851, that is, only ten years after the Colony's occupation, efforts to reclaim shallows from the sea commenced, 8½ acres being filled in between Wilmer Street and Bonham Strand West. The East Praya was reclaimed in 1873, and in the year 1884, 23 acres were added at Causeway Bay. In 1886 an area of 22 acres was reclaimed at Kennedy Town. Since that time the largest of the Colony's reclamations—the Praya—has been completed, thus adding another 65 acres to meet the land requirements of the Colony.

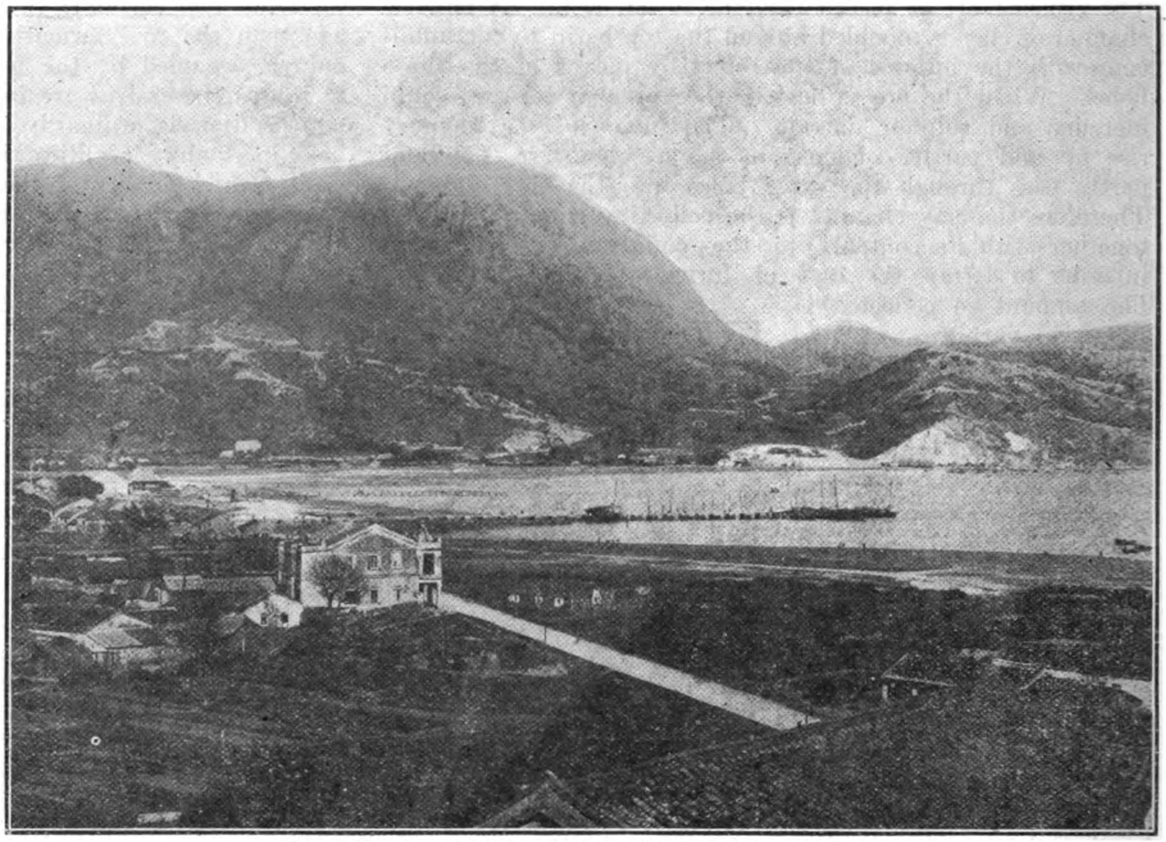
The need for space can be easily appreciated when it is remembered that every part of the building ground on this large area was covered with houses almost as soon as it was completed. Yet, in spite of all these reclamations and the rapid development of the Kowloon Peninsula as a residential area, the great problem remains unsolved. In some districts the overcrowding exceeds that in some of the slum parts of some of the world's great cities.



A Nullah in course of Construction

Across the harbor, at Kowloon Bay, there is now in progress the greatest work of reclamation yet attempted in the history of the Colony. This scheme is being carried out by the Kai Tack Land Investment Company. It was first conceived by Dr. Wu Ting-fang, the famous Chinese diplomat, and was fostered by the late Sir Kai Ho-kai, C.M.G.

Recently, by the kindness of Messrs. Little, Adams, and Wood, Architects, the writer was taken over the district to see the progress that has been made and to see something of the great work which has yet to be done. The reclamation extends across the whole head of Kowloon Bay and covers an area of 230 acres. The contract for the first portion amounted to one and three-quarter million dollars. The Praya—or waterfront—will be over one and a half miles in length and there will be piers at which ocean-going steamers can be berthed at low tide.



Site of Works—The head of the bay is being reclaimed

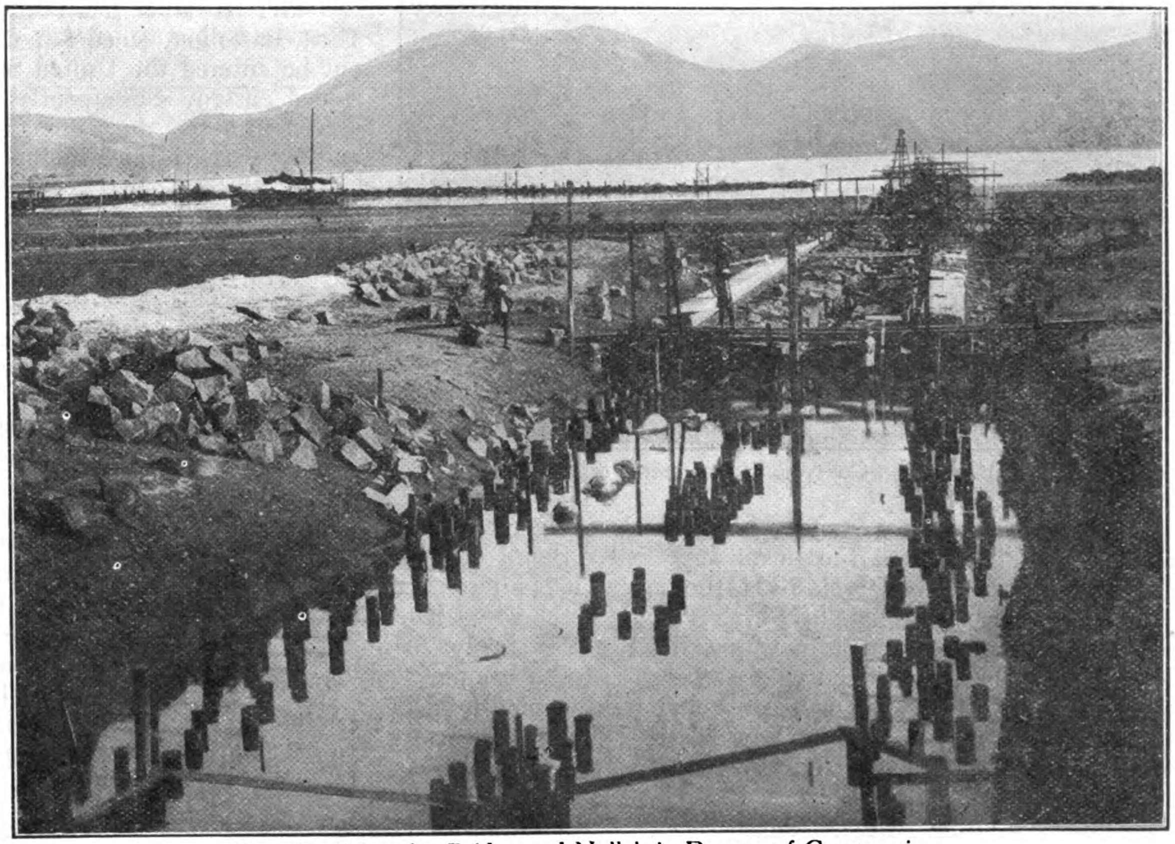
The Praya is to be 175 feet wide, and the main central thoroughfare 100 feet in width. All the other roads intersecting the Settlement will be 50 feet wide. The Praya and the main central thoroughfare are to be lined with trees. A service of well-appointed ferry boats is to run to and from Hongkong island with stations at West Point, Quarry Bay, and Shaukiwan. An area of four acres is being laid out as a recreation ground.

The site is undoubtedly the most suitable for such a Settlement out of the island of Hongkong. It is situated at the head of a great sheltered bay, which at present is the refuge for the bulk of the shipping in the harbor when typhoons are our unwelcome visitors. Behind the Settlement are high hills—bearing familiar landmarks such as the Lion's Head—which in winter will give shelter from all the cold winds, while in the summer it will be open to all the cool breezes which blow across the har-

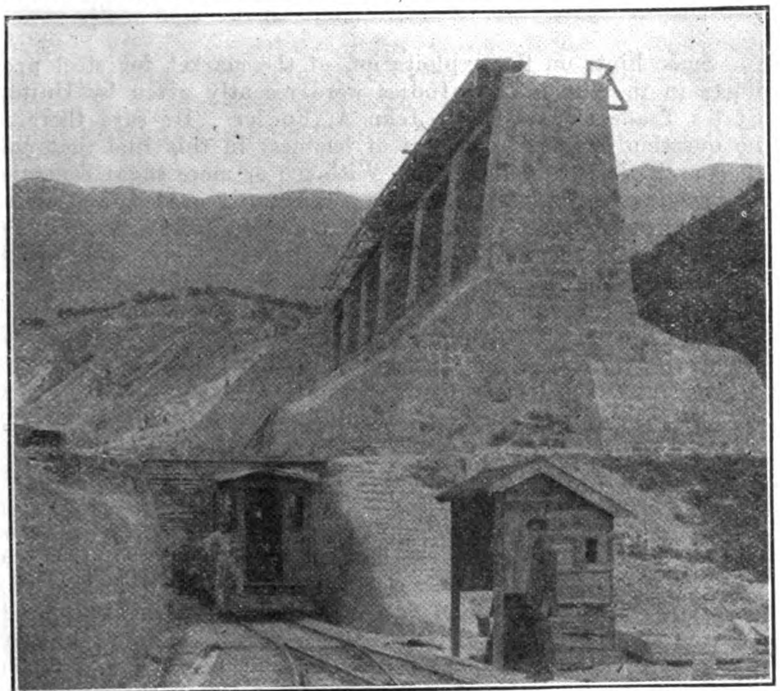
bor. As a residential district the site will be ideal.

Mr. F. R. J. Adams, of the firm of civil engineers and architects already mentioned, under whose personal supervision the work is being done, says that the drainage on the reclaimed land will be an important feature. He pointed out the splendid nullahs—or waterways—which have been designed and are being made for the purpose of thoroughly draining all the back areas between the reclamation and the hills to the north. There are four nullahs—which will be the biggest in the Colony—each having a width of 36 feet, and these run through the Settlement. These nullahs have roads 40 feet wide on either side thus giving a total width of 116 feet. The nullahs are to be spanned by thirty or forty reinforced concrete bridges. The main front road or bund will be 175 feet in width and the main central road will be 100 feet wide. There will be other roads intersecting the Settlement 50 feet wide.

An important thing to note about the whole undertaking is that it is an exclusively Chinese enterprise. The primary object is to create a residential suburb where wealthy Chinese will be able to live in peace and comfort. With such an object in view it is certain to be popular, for the Chinese, no matter where on the earth's surface they may wander to, always come back, if it is at all possible, to their own land. With the wealthy Chinese this modern city of the future will be a goal for "*otium cum dignitate.*" So that at present in the reclamation of Kowloon Bay we have the making of the foundation of a new township, one to which the Chinese are sure to flock. There will be plenty of room, for marked off on the plan are forty-seven sites, each of these occupying an area of from 179,999 to 200,000 sq. feet. So it will be seen there is room for residences of quite palatial dimensions with the necessary gardens.



Showing Piling for Bridge and Nullah in Process of Construction

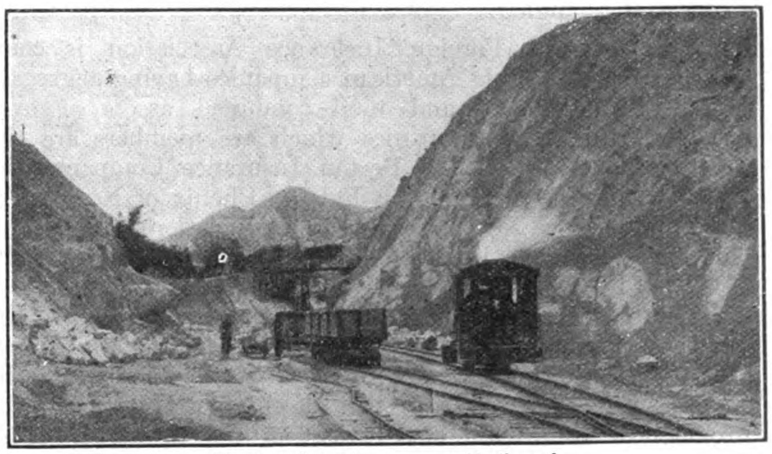


Filling Shoot. Made on the spot by Chinese. The earth taken away here is used elsewhere for filling in

Another point which will count for much with the Chinese is that the "*fung shui,*" of the place is good. On the one side are the sacred rocks with the historic and famous Sung stone among them, and in the rear is the Lion's Head on the hills.

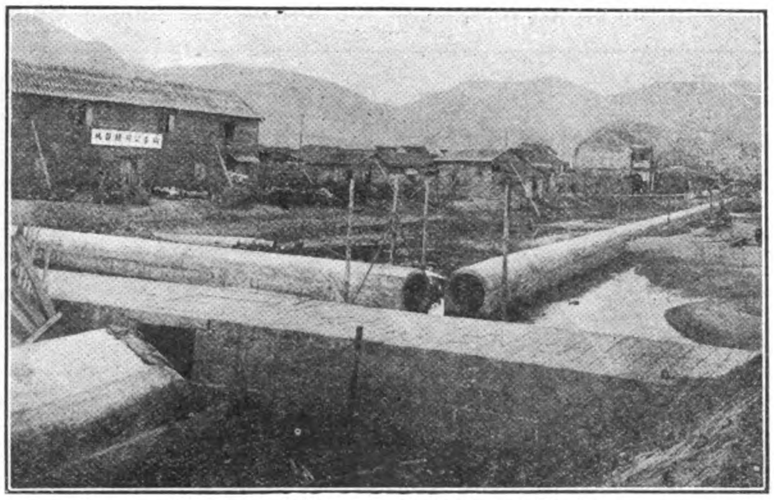
At the rear of the Settlement the promoters have reservations on lands which may at some future time be used for industrial works, and as the Crown lease allows the use of land for factories or godowns for storing coal, applications are already coming in.

Another advantage is that a larger area of level land is still available to the north of the reclamation and of the Custom's Pass, or Saikong Road, over the ground now embracing the villages of Pakuktsai and Ngauchiwan, around Hammer Hill, and the villages of Shatiunling, Ngaiutau, Pokong, Pakhang and Ngatsinwan to Kowloon City, most of which is now occupied for cultivation.



Cutting for Temporary Railroad

A regular army of Chinese workmen is at present engaged on the work of reclamation but a still greater army will be needed ere the work is finished. Near the Taiwan Glass Factory is a quarry from which splendid granite, used in the foundations, is obtained. The sea-wall is also made from the same.



Reinforced Concrete Stormwater Drains

A locomotive shed stands on the land so far reclaimed, and small railway lines run in all directions. Small engines are busy pulling heavy truck loads, the trucks, it is interesting to note, having been made by Chinese labor on the site. The East section of the area is now reclaimed and is ready for building on this year. The whole scheme is to be completed in five years. The work is a great undertaking but there is ample scope for such in the New Territory, and we cannot doubt that further development in this direction is assured.

American Foreign Insurance Association to Enter China

The American Foreign Insurance Association is now making active progress in carrying out the plans for the establishment of the American fire and marine insurance companies in the foreign field. Announcement was made recently of the appointment of Allen W. Hexamer as marine manager for the republic of China. He will have his headquarters at Shanghai.

The American Foreign Insurance Association is composed of twenty strong American companies having aggregate capital of $50,250,000 and total combined assets of over $387,000,000. The companies which are members are the American of Newark, the Boston Insurance Company, the Continental of New York, the Fidelity-Phenix of New York, the Firemen's of Newark, the Fire Association of Philadelphia, the Fireman's Fund of San Francisco, the Glens Falls of Glens Falls, N. Y.; the Great American of New York, the Hartford Fire of Hartford, the Home of New York, the Insurance Company of North America, the National of Hartford, the New Hampshire Fire of Manchester, N. H.; the Niagara Fire of New York, the Phoenix of Hartford, the Providence-Washington of Providence, the Springfield Fire and Marine of Springfield, the St. Paul Fire and Marine, and the Westchester of New York.

Mr. Hexamer, who has just been appointed marine manager for China, is at present marine manager for Fred S. James & Co., and has resigned that position as of December 1. He started in the marine insurance business in September, 1910, with Mather & Co., in average adjusting. In October, 1913, he went with Edgerton Parsons as manager of the loss department and continued with the succeeding firm of Parsons and Eggert until October, 1914, when he entered the brokerage end of the business, handling all classes of marine business. He joined the Fred S. James & Co. office on March 1, 1919, as marine department manager.

Mr. Hexamer has been a member of the Naval Militia, First Battalion, since June, 1912, and when the war broke out he entered the United States active service as a commissioned ensign, subsequently becoming senior lieutenant. He served in active duty doing convoy on the U.S.S. *Louisiana* and later saw service in the Bay of Biscay, English Channel and North Sea. In December last he was detached and went on duty with the salvage section of the Bureau of Construction and Repairs. He was ordered to inactive duty February 28, 1919, and immediately returned to the marine underwriting field, joining the James office.

He has had a wide range of experience and is generally looked upon as a capable man well qualified for the important post for which he has just been selected by the American Foreign Insurance Association. He is a member of the Marine Insurance Club, the New York Athletic Club and the Association of Average Adjusters. He will make his headquarters in Shanghai, but will be called upon to travel extensively among the principal ports of China while establishing the association in this country, where it will write marine, inland marine and fire risks. Mr. Hexamer is not entirely unfamiliar with the Far East, having already been in the Philippines and Japan.

The American Foreign Insurance Association has already established connections in Australia, New Zealand, Argentina, Brazil, Chili, Colombia, Japan, China and the Philippine Islands.

How to Sell Steel Products in the Dutch East Indies

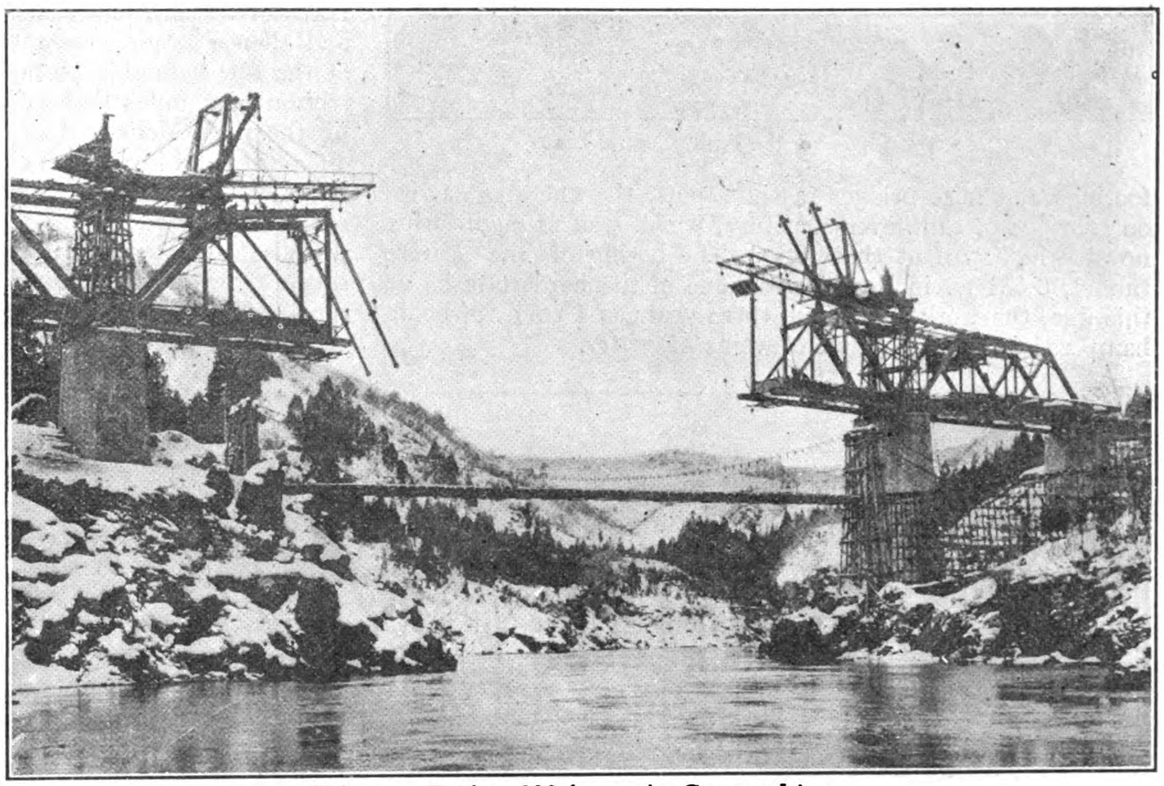
Some hints on the exploitation of the market for steel products in the Dutch East Indies were recently given by United States Trade Commissioner John A. Fowler. He says there is no question about the amount of business in this line that can be done in Java and Sumatra. With 200 or more sugar centrals, thousands of miles of light rails are constantly needed, and under the present plans of the Dutch East Indian Government 10,000 miles of railroads will eventually be built. Government work planned during the next four years will alone require 45,000 tons of cast-iron piping, to say nothing of the private needs of oil companies for pipe lines, and the demand for reinforcing material in concrete construction work. As soon as conditions become somewhat normal, new mining ventures will be opened up in what is potentially a great mining country, and the supply of machinery for this work will come entirely from abroad.

Mr. Fowler emphasises that there are opportunities for firms to get into business on a basis of service rather than price, as adopted by the Germans, who kept a stock of material, and engineers ready to sell any quantity of rails laid in the field and equipped with all the rolling stock required. The only practical manner in which new machinery can be introduced, writes Mr. Fowler, is to give the factory some guarantee of satisfactory results, and back up the guarantee by placing an expert on the job to see that the natives operating the machinery learn to run it with the required skill. The type of man to do this work must not only be an expert in the mechanical phases of his machine but also an expert in the handling of men, particularly the native workmen.

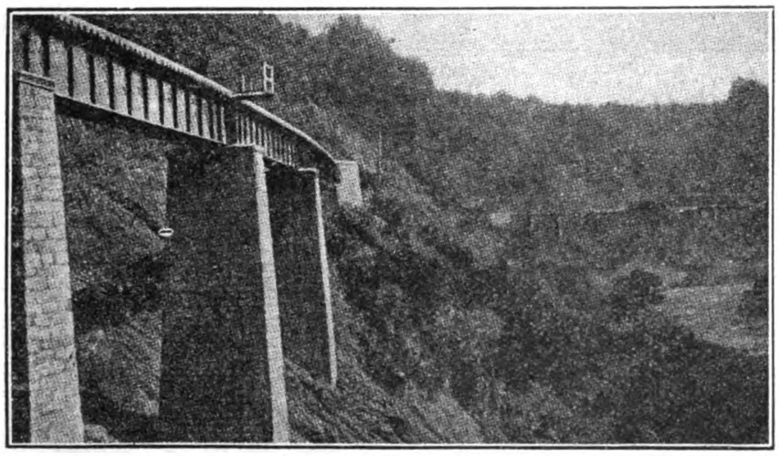
Engineering Features of New Extensions on Japan's Railways

JAPAN, which forms the crest of a submarine range in the Pacific, is traversed from end to end by the broken ranges of mountains, one of which comes from Saghalien and the other from China viâ Formosa. The two chains meet in the centre of the Main Island, and, with the Fuji Group cutting across them, constitute the axial range of the Main Island known as the "Japan Alps." These rugged ranges divide the Main Island into two parts—Southern, or the Pacific seaboard, and Northern, or the seaboard of the Japan Sea. These divisions are, again, subdivided by various branches of the range and distinct chains, some of which fall abruptly into the sea. The natural configuration, therefore, leaves no extensive plains, and the rivers are mostly short mountain torrents.

This brief geographical description of the country will be sufficient to give an idea of the difficulties attendant upon the construction of railways, which are largely of mountainous nature, and it may also explain the prevalence, on the Japanese railways, of the ruling gradient of one per cent., sometimes 1 in 30 to 40, together with the presence of numerous tunnels, curves, and cuts and high embankments. This is particularly the case with the extensions undertaken under the new *régime*, mostly with the object of linking up the existing lines or affording a commercial outlet to remote and isolated parts of the country. Two of such extensions stand conspicuous—the Central Line, which traverses the high land of Middle Japan, and the San-in Line, which runs along the rugged coast of West Japan on the seaboard of the Japan Sea. Of other projects in the Main Island may be mentioned the Toyama Line which skirts the rugged Japan Sea coast in Middle Japan, and the Taira and the Gan-Etsu Line, which, linking up the two trunk lines running north from Tokyo—the North Eastern Main and the North Eastern Coastal Line, are designed to bring the coast of the Japan Sea into rail communication with the Pacific seaboard, and farther north the Shinjo Line built for a similar purpose. All these lines are for the most part in mountainous regions and serve as an explanation for the rise in the cost of construction subsequent to the nationalization of the lines.



Tokuzawa Bridge, 300-ft., on the Ganetsu Line



Near Omaki Bridge

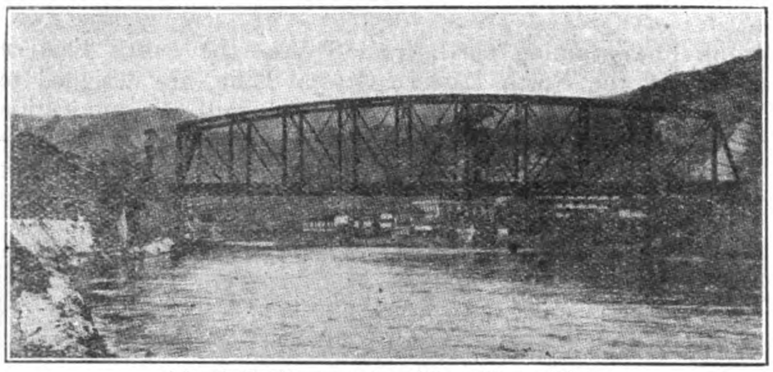
The engineering features of some of the more important of the new extensions should be of interest:

Main Island, Eastern Territory

Boso and Hojo Lines.—Three new railway extensions in the eastern peninsula bounding Tokyo Bay as undertaken under the designation of the Boso Line are designed to serve the intensively-cultivated and densely-populated alluvial plain east of Tokyo, a region which is rich in agricultural and marine products. Farther south, an extension designated the Hojo Line has been built as far as the southern extremity of the peninsula. This line involved the boring of seven tunnels, including the Nokogiriyama tunnel, 4,106 ft. in. length on the provincial border between Kazusa and Awa provinces.

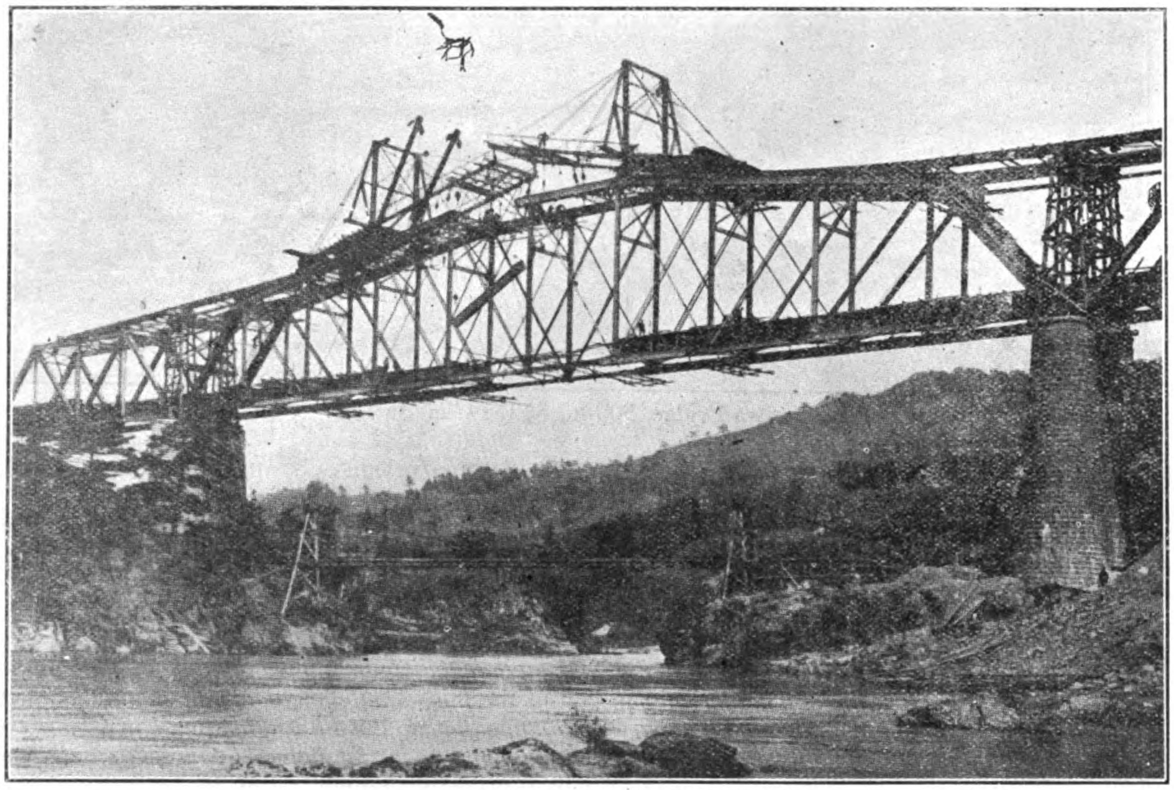
Gan-Etsu Line (Koriyama-Niitsu).—Through the greater part of its length of 58 m. 58ch. this line, which is the western extension of the Taira Line, follows the valley of the river Akano, which cleaves its course through the lofty ridges that divide the province of Iwashiro from Echigo. In order to lead the line up the sidehills of this wall-sided narrow gorge on a 1-in-88 grade with a minimum curve of 15ch. radius, it was necessary to use tunnels at frequent intervals, and support the line on high viaducts at numerous places. Altogether 32 tunnels, aggregating 34,574 ft. in. length, were bored, and 99 bridges with a total length of 13,287 feet were built over the river. The rapids of the river Akano, to be particular, had to be crossed at five places by bridges of long spans and

high piers on account of the high flood mark of the river, and, at three places where it was found impossible to provide



No. 1 Bridge over the Kiso, Central Line

footings and false bridges in the rapids, the line was carried on a bridge of cantilever structure, which was an engineering novelty in Japan at that time. The boring of the Hirase tunnel, 6,581 ft. in. length, was one of the hardest tasks on this line, the work taking full three years as a result of being hampered by the eruption of veins of water.



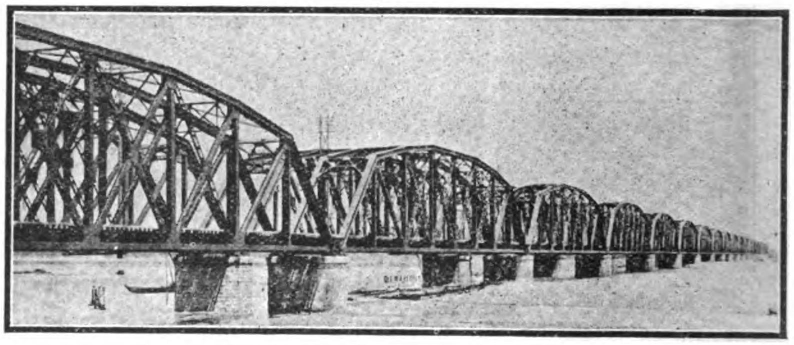
Kamanowaki Bridge, on the Ganetsu Line

Shibata Line (*Niitsu-Shibata*).—This 16m. 46ch. line is an extension of the Gan-Etsu Line. The lower reach of the river Akano is crossed, on this line, by a bridge 4,077 ft. in length consisting of four spans of 200 ft., ten spans of 70 feet, and fifty-six spans of 40 feet. Considerable difficulty was encountered in the construction of this bridge, particularly in the work of piling and the provision of scaffolding, on account of the weak strata of the river bed, combined with the depth of the water, the maximum of which was more than 16 ft. The work was further hampered by the flood which occurred in the thaw season. Under the circumstances it was deemed necessary to expedite the laying of girders, and to that end each span of 200 ft. was erected in two days and a half on an average, and the remaining ten of 70 ft. and fifty-six of 40 ft. girders were finished at the rate of 7 spans per day. The completion of the work in so short a space of time may be recorded as one of the triumphs of Japanese engineering.

Taira Line (*Taira-Koriyama*).—This 54-mile line runs partly through broken country with the ruling gradient of 1 in 50 and the sharpest curve of 15ch. radius. One of the engineering features of the line was the bridging of the river Abukuma. The bridge has ten spans of 40ft., seven spans of 60ft., and two spans of 150ft., the aggregate length being 1,218ft.

Shinjo Line (*Kogota-Shinjo-Sakata*).—The Shinjo Line starts from Kogota, a station on the North-Eastern Line north of Sendai, and leads west to Shinjo on the O-U Line, and thence heads westward and terminates at Sakata, one of the few habitable ports on the Japan Sea coast. The section of 5 miles that is laid through the gorges watered by the river Mogami was one of the greatest engineering difficulties and involved the boring of no less than nine tunnels, three of which exceed 2,000-ft. each. More than two years of laborious work were required to complete this short section. Another engineering feature was the bridging of the river Mogami, which the line crosses at two places. No. 1 Bridge measures 1,426-ft. and consists of four spans of 200-ft. and nine spans of 60-ft.; No. 2 Bridge is 2,701-ft. long and consists of twenty-two spans of 60-ft. and six spans of 200-ft.

Scarcely less difficult was the section following the valley of the river Arao, which required the boring of two tunnels, 3,486-ft. and 2,923-ft. long respectively. The sudden exhalation of sulphuretted hydrogen, which took place in the excavation of the latter tunnel, obliged the engineers to give up the work, and to relocate part of the alignment in order to avoid the sphere affected by the poisonous gas. The new alignment, passing along the cliffy valley of a mountain stream, involved a great deal of cutting, embanking and tunnelling work. In order to furnish protection against the onrush of the river Otani, there were provided high retaining walls at two places —one, 48-ft. high and 328-ft. long, being built entirely with concrete work and the other, 35-ft. high and 228-ft. long, built of pitching stones.

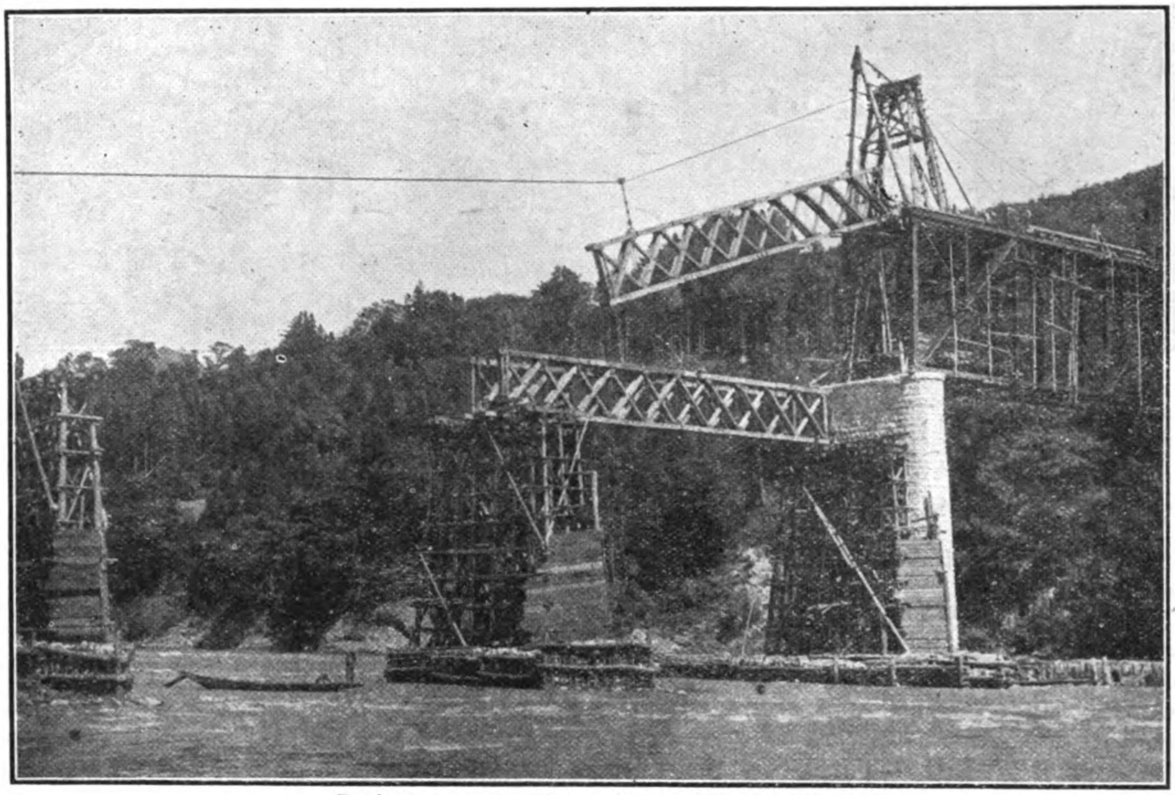


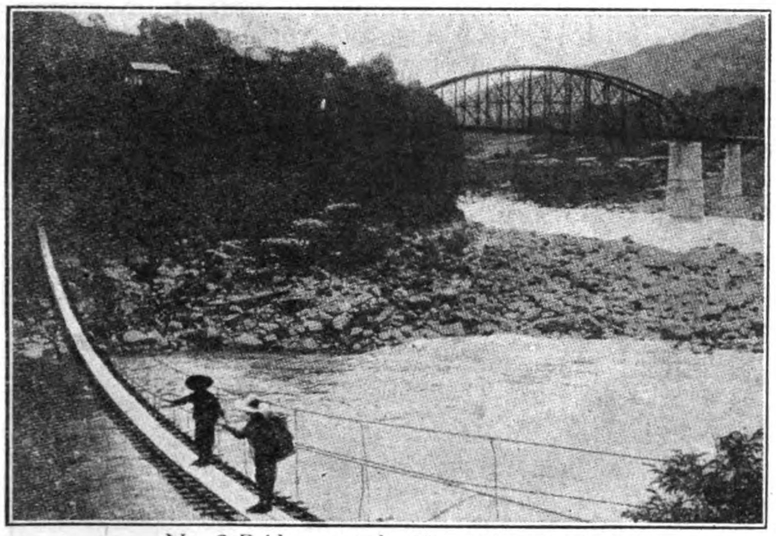
Double Bridge at Tenryugawa

Main Island, Middle Territory

Central Line (Tokyo-Nagoya).—This line, going westward from Hachioji, north of Tokyo, passes through the craggy and lofty range of mountains which separates the two provinces, Musashi and Kai. In order to use the maximum grade of 1 in 40 with the sharpest curve of 15ch. radius, it was necessary to drive on a section of 53 miles 42 tunnels, with an aggregate length of 62,745-ft., including Kobotoke (8,350-ft.) and Sasago (15,279-ft.). The excavation of these two tunnels, especially the latter, was a very toilsome proceeding, not only because the rock to be drilled was hard, but also on account of the presence of underground water veins.

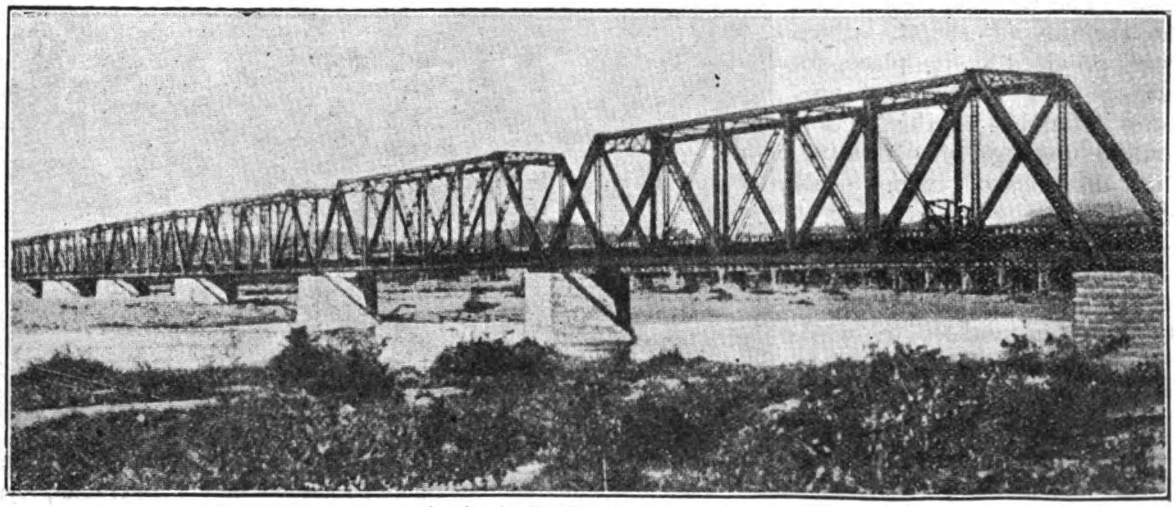
What made the work on Sasago tunnel particularly difficult to handle was the fact that the western entrance of the tunnel was located on the cliffy bank of a river, impossible of access, and the start therefore had to be made at a point 4 chains off. From the eastern side a drift of 170-ft. was driven to the line of centre of the tunnel to push on the work toward both sides. The hydraulic power of the two rivers which run near both entrances was utilized for the supply of electric current for operating the air compressors and for lighting purposes. Farther on the peaks of the ridges of mountains which separate the province of Kai from Shinano are passed by the use of no less than eight tunnels aggregating 6,314-ft. on a section of 46 miles together with an embankment which reached more than 90ft. high at several places.

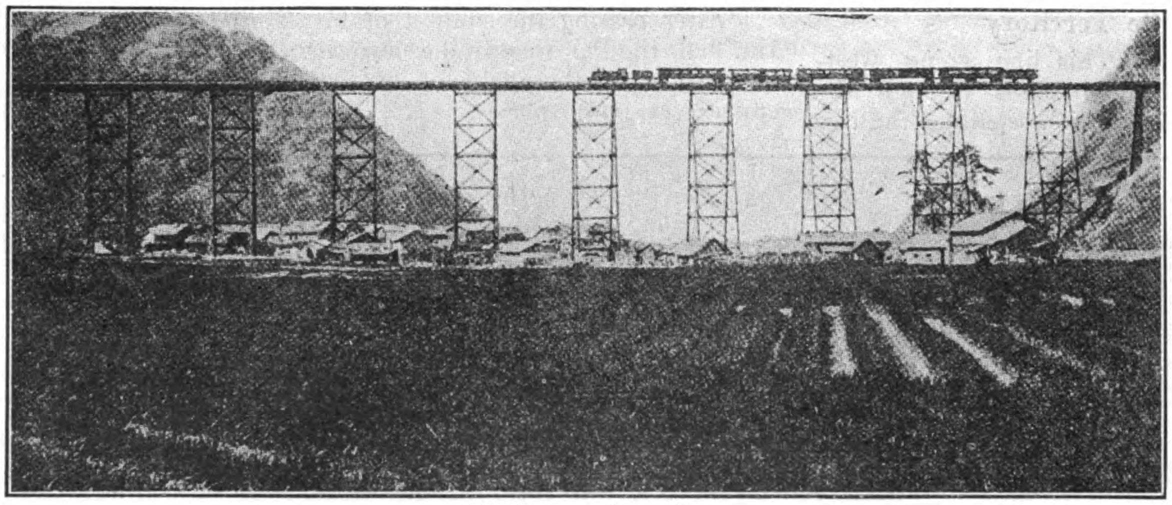

Bridging over the Taëma River, Ganetsu Line


No. 2 Bridge over the Kiso, Central Line

After passing the summit of Mt. Torii by a tunnel of 1m. 3ch. the line follows the narrow valley of the river Kiso, hemmed in by the chain of overhanging ridges, which it crosses at two places. No. 1 bridge over the river Kiso consists of one span of 300-ft. and two spans of 80-ft., and No. 2, one span of 300-ft. and two spans of 60-ft.

Toyama Line (Toyama-Naoetsu).—From Ichiburi eastward to Omi, a distance of 8½ miles, the alignment of this line puruses its tortuous course keeping on to the craggy termination of the northern range of the "Japan Alps," as it descends abruptly into the Japan Sea,—a route which was proverbially regarded as impassable even for pedestrians except at the peril of their own lives. Tunnelling, grading, and cutting works were exceptionally heavy on this section, involving 9 tunnels aggregating 19,195-ft., including three between 3,000-ft. and 5,000-ft. The boring of the tunnel of Koshiraza, 4,956-ft. in length, took no less than 1,000 days, the excavation requiring 49,900-lb. of dynamite to explode the hard, rocky strata.


Arakawa Bridge, Shibata Line



Viaduct at Amarube

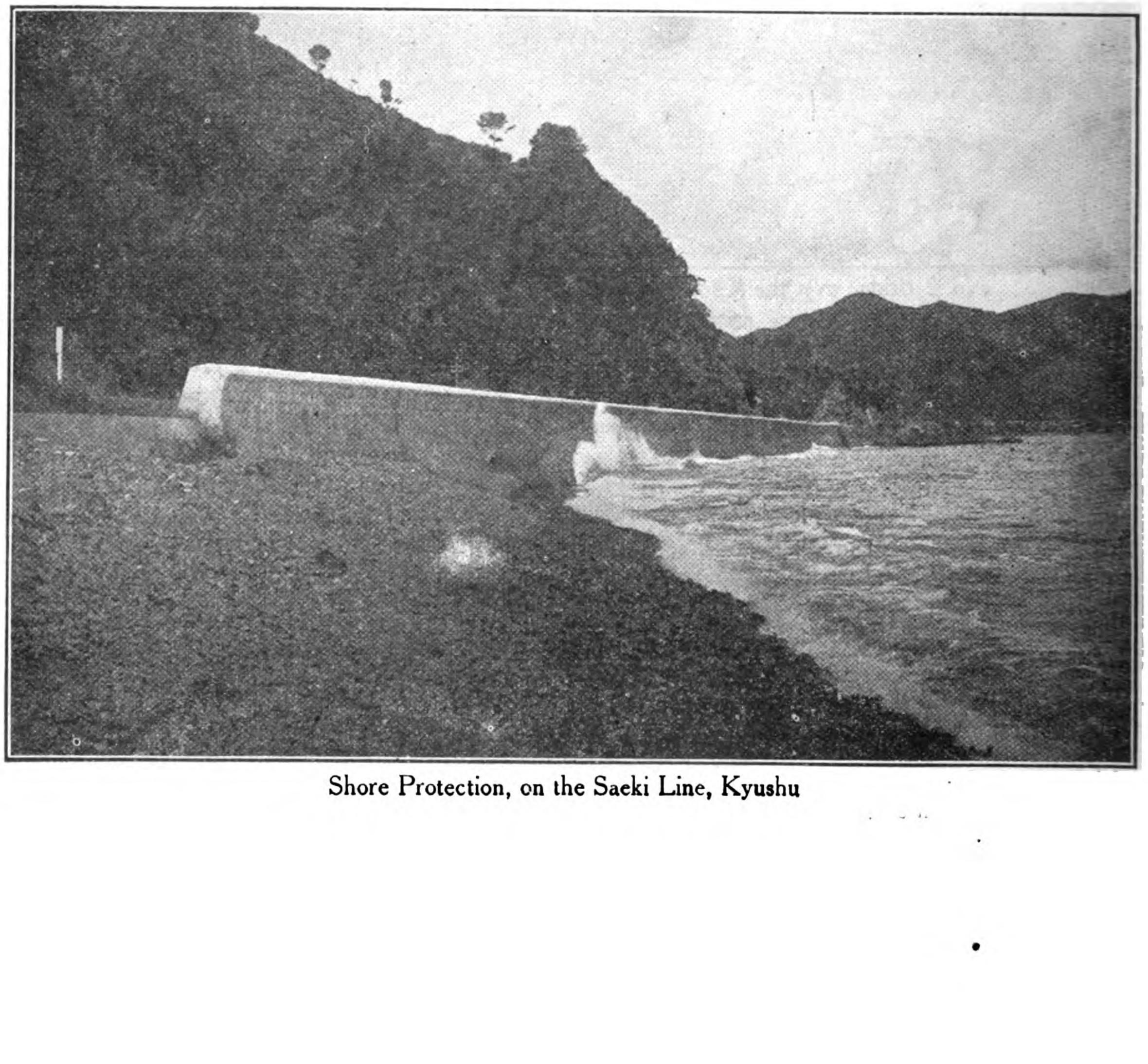
Main Island, Western Territory

San-in Line (Kyoto-Nima).—The Wadayama-Kasumi section of this line, has acquired engineering notoriety, on account of the arduous task involved in filling in the pond of Momoshima, through which the alignment was made to run for a matter of 12 chains. The ground subsided as soon as it was filled in, and part of it slipped and swelled out above the surface of the pond, the piles set up for retaining purposes in consequence collapsing under the lateral pressure of the earth. Altogether over 900 days were spent on the work, the amount of earth required for the purpose of infilling reaching the colossal figure of more than 160,000 cub. yards. Originally part of the Japan Sea, the pond was presumably cut off by the delta formed in the estuary of the river Maruyama, as was confirmed by geological survey, which revealed the existence of a layer of mud over 90-ft. thick and, beneath it, a layer of mixed sand and shells two or three feet thick above the rocky stratum dipping sharply towards the river. This configuration of the ground undoubtedly caused the earth, as originally cast in, to subside through the muddy layer, and then to stray away from under the bottom of the pond.

The boring of the Ashiya tunnel, 6,029-ft. in length, was another tough piece of work on this section. The excavation was in a mixture of granite and trap rock for the eastern side and clay-slate for the western side. The work was facilitated by the use of shafts, which were provided at five places for boring and ventilating purposes. Farther on this section contains a range of mountains, the sidehills of which fall sharply to the sea, and so it was necessary to carry the line through it by the frequent use of tunnels which aggregated 16,800-ft. in total length, while at other places the line had to be supported on an embankment 30-ft. to 40-ft. high. The Kasumi-Tottori section zigzags along the narrow valleys through the ridges which jut out into the sea at several places. It involved heavy tunnelling, bridging, gradient and earthwork, particularly where the line was supported on an embankment at an altitude of more than 100-ft. One of the engineering features of this section was the Momomi tunnel and the viaduct at Amarube. The Momomi tunnel, 6,040-ft. in length, required four years of unremitting labor and an outlay of Y.600,000. The work was hampered by the eruption of veins of water, which, with the progress of the work, increased to 500 gallons per minute, baffling electric pumping for a time.

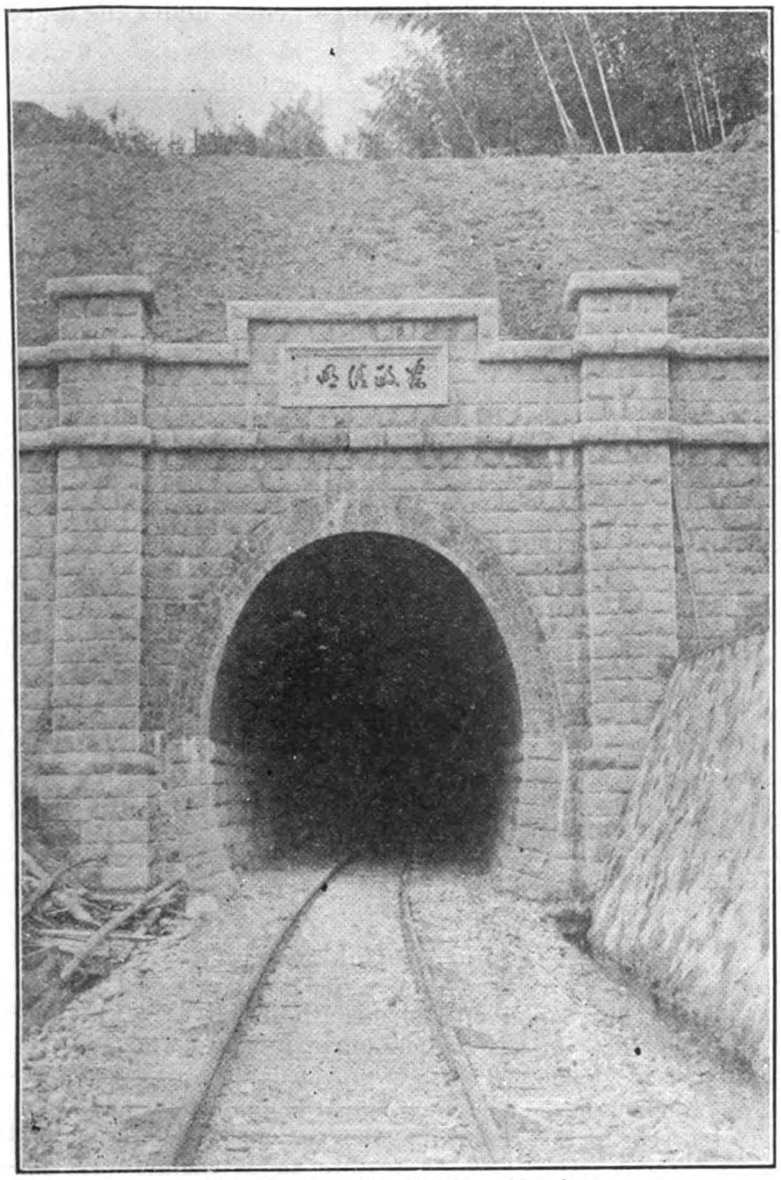
The trestle-work viaduct at Amarube was an engineering novelty in Japan at that time and was built on the plan formulated on the advice of Mr. Pual L. Wolfel, an expert in this line of engineering at Philadelphia. It is 1,019 ft long and 136 ft. high, and consists of 11 steel trestles superimposed by plate-girders of 30 feet and 60 feet laid alternately.

The westward extension of the San-in Line as far as Masuda is now well forward. The alignment generally skirts the rugged coast of the Japan Sea, passing through broken chains of narrow and deep valleys, entailing heavy tunnelling and embanking work. Sixteen tunnels over 300 ft. long were driven, including Yunotsu, 3,707 ft., Nagasawa, 2,574 ft., No. 1 Asari, 1,650 ft., and No. 2 Asari 1,230 ft. Farther west, the line is designed to bifurcate at Masuda, one branch running westward as far as Hagi, and the other turning south and leading to Yamaguchi, the terminus of an 8-mile branch to the San-yo Main Line. This extension which passes through the axial range of West Japan is one of the most difficult lines involving heavy rock and



Shore Protection, on the Saeki Line, Kyushu

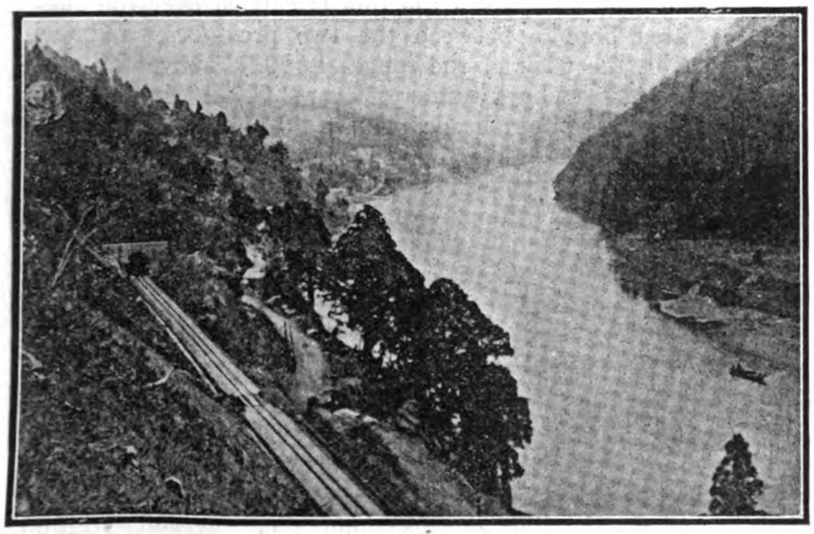
tunnelling work, including a tunnel of 6,223-ft. driven through the precipitous pass of Tashiro together with many others of more or less length.



A Tunnel on Sendai Line, Kyushu

Island of Shikoku

Of the four component islands of Japan Proper, Shikoku is the most scantily provided with railway facilities, the lines being at present confined to the northeastern coast and to the valley of the river Yoshino in the eastern part of the island. There are now two railway projects contemplated in the island—one being the extension of the existing Takamatsu-Kawanoe Line westward to Matsuyama, a town of local importance on the north coast, the other being designed to connect Kotohira, the terminus of the branch to the Tadotsu Line, with Awalkeda, the western terminus of the existing Tokushima Line, and then to lead the extension to the south coast of the island in order to give commercial outlet to this part of the island, most inaccessible at present, though rich in marine products and natural resources.

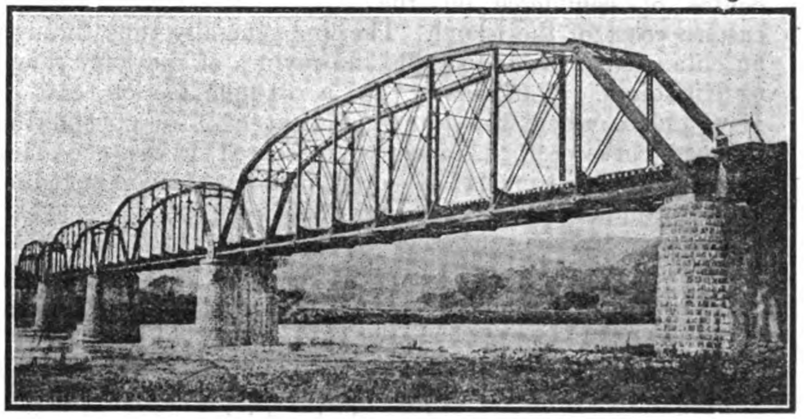


Approaches to the Takaya Tunnel

Island of Kyushu

Kagoshima Line.—The extension, going northward from Kagoshima, heads through rugged country maintaining the maximum gradient of 1 in 40, with the sharpest curve of 13ch. radius. This was effected by the use of numerous tunnels and by means of a switchback on the spiral system giving an ascent of 1.25 miles for a difference in altitude of 127-ft. at the point of crossing.

Farther north it keeps close to the steep and craggy hillsides of the range of mountains beetling over the rapids of the river Kuma. Twenty-three tunnels have been bored in a distance of 33 miles to carry the line through this broken tract on a maximum gradient of 1 in 100 with a minimum curve of 13ch. radius. The rapids of the Kuma are crossed three times by bridges of long arches and high piers, necessitated by the deep ravines and the high flood mark which exceeded 20-ft. in one case. At several places the line is supported on viaducts built over the deep ravines. The ridge of Mt. Yadake, which separates the provinces of Higo, and Hiugo, had to be perforated by a tunnel of 1m. 24ch., the



No. 1 Bridge over the Moyami, Shinjo Line

longest on the line. The excavation was largely in hard rock, and the trouble was further aggravated by the eruption of veins of water and by the fact that the heavy gradient of 1 in 40 had to be designed for the track in the tunnel. The embankments reached as high as 115-ft. at one place.

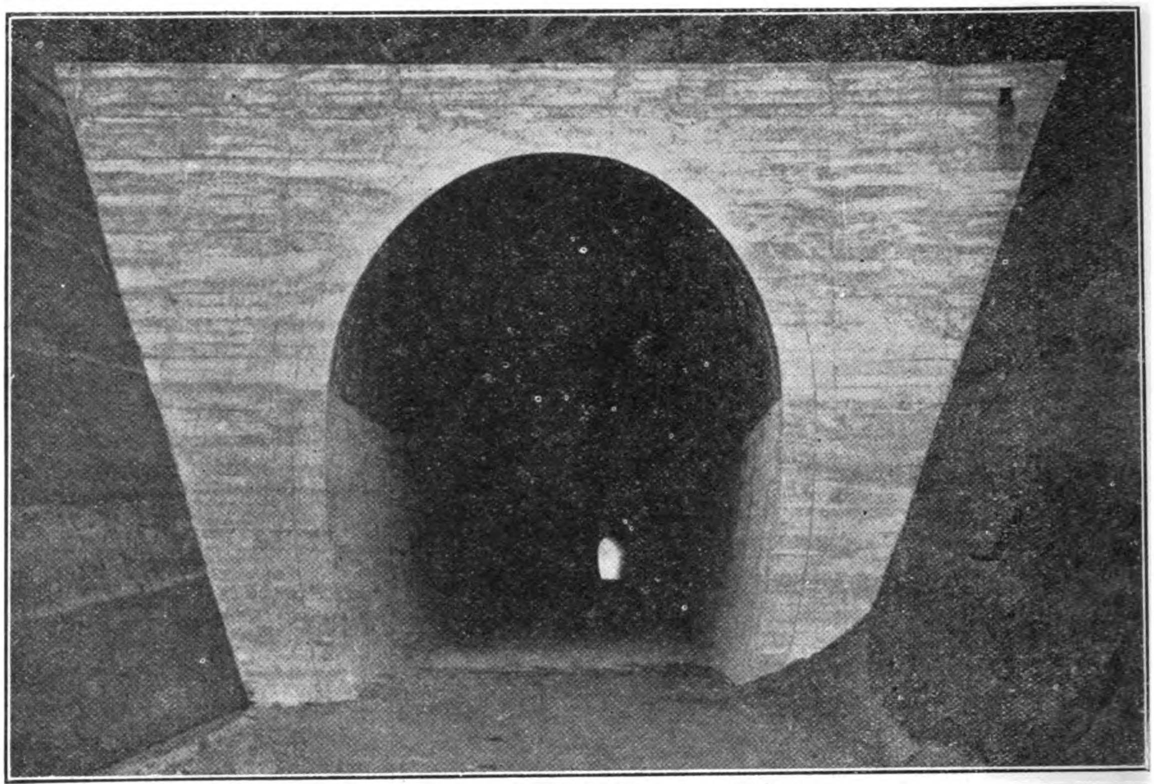
Oita Line (Yanagigaura-Oita).—On this 40-mile line which exploits the north-eastern part of Kyushu, tunnelling and cutting work were rather heavy, as it has largely to keep to the foothills of the mountain range, which drops abruptly into the Bay of Beppu, leaving a narrow strip of land.

The cliffs had to be terraced for construction at several places by cutting the edges of the sidehills or by infilling work along the shore. The line makes as many turns and bends as are allowed by the radius of the minimum curve of 15ch. radius, and where it is no longer possible to maintain this curvature, the line is supported by a shore protection wall, 25-ft. high, for a distance of 55ch. An immense amount of cutting and tunnelling work was involved.

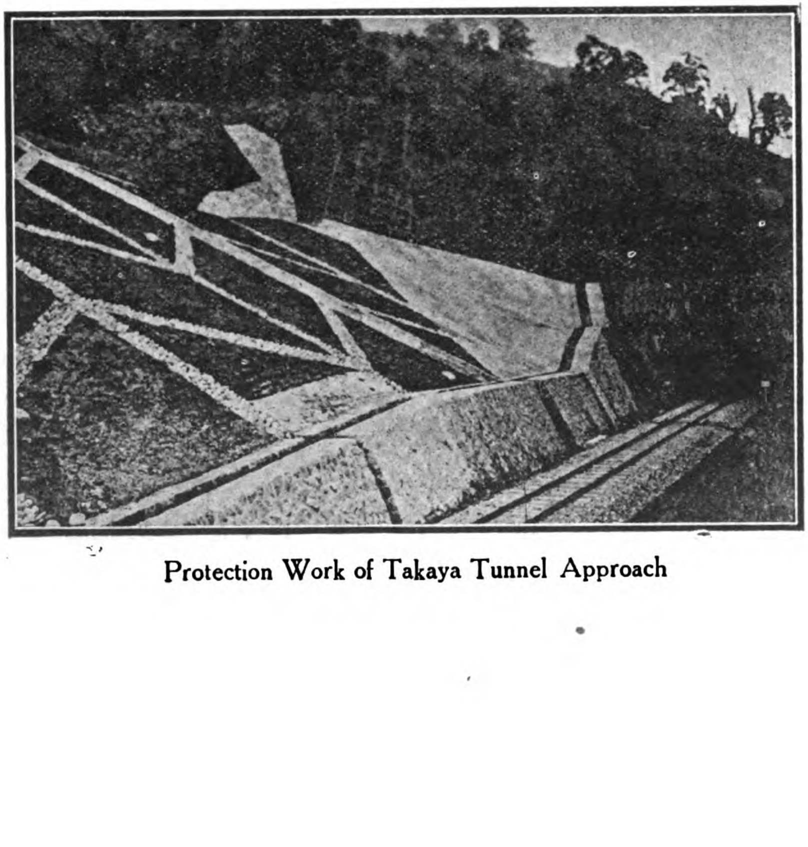
Saeki Line.—This 41-mile line connects Oita with Saeki on the eastern coast of the island of Kyushu, the ruling gradient being 1 in 66 and the sharpest curve of 18ch. radius. The southern portion of the line makes a tortuous course, as it has to traverse a mountainous district with numerous ravines and gorges, there being 27 tunnels aggregating 30,120-ft. in length. The Sashu tunnel, 4,669.5-ft., proved the most arduous undertaking, as the entire strata were composed of hard crystalline schists intermixed with loose layers and fragile splinters at places, which collapsed more than once in the course of boring. The boring of the Tokuura tunnel, 5,253-ft., and the longest on the line, was also rendered extremely difficult by the presence of hard rocks, and which, with intervening beds of clayey rocks interspersed with loose layers, exposed the laborers to constant peril of collapse.

Miyazaki Line.—One of the most difficult engineering projects carried out in Japan under the new *régime* was the construction of the Miyazaki Line, 69m. 50ch. This line diverges at Yoshimatsu, from the Kagoshima Main Line and reaches Miyazaki, a local centre of commerce on the eastern coast of the island. The line generally runs through an entangled mass of foothills and ravines of the lofty range of Kirishima. Particularly on a 31-mile section, east of Miyakonojo, where the ruling gradient of 1 in 60 and the sharpest curve of 15ch. radius were secured, it was necessary to drive seven tunnels of over 550-ft. each, including Aoidake tunnel, 5,016-ft. or about one mile.

The excavation of this tunnel was largely in weak serpentine rock, which, as the excavation proceeded, gave place to clay-slate reduced to a friable condition by the action of the air. In consequence, the cave contracted and crushed in under the pressure of the earth, damaging the system of timbering seriously. A vertical shaft of 150-ft. was sunk in order to expedite the work, and the driving of the heading required no less than 669 days—an average rate of 7.5-ft. per working day. The second longest tunnel was Inotani No. 4, 1,933-ft., through a mixture of black clay-slate rock and volcanic ash, of a fragile and most treacherous nature. Its cohesion was soon destroyed by the contact of the air, and this caused the bricking to crack under the heavy pressure of the earth.



A Tunnel on the Hojo Line, near Tokyo



Protection Work of Takaya Tunnel Approach

Island of Hokkaido

The Construction of Hokkaido Railways Law promulgated in 1896 laid the foundation of railway work in the island of Hokkaido. This law provided for a new construction of 562 miles. The new construction in the island for the ten-year period following the nationalization amounted to 356 miles. One striking feature about the railway construction in Hokkaido is that the lines are largely of a colonial nature and have been built expeditiously and with the greatest possible economy in the plans, so that they present but few engineering feats worthy of special mention.

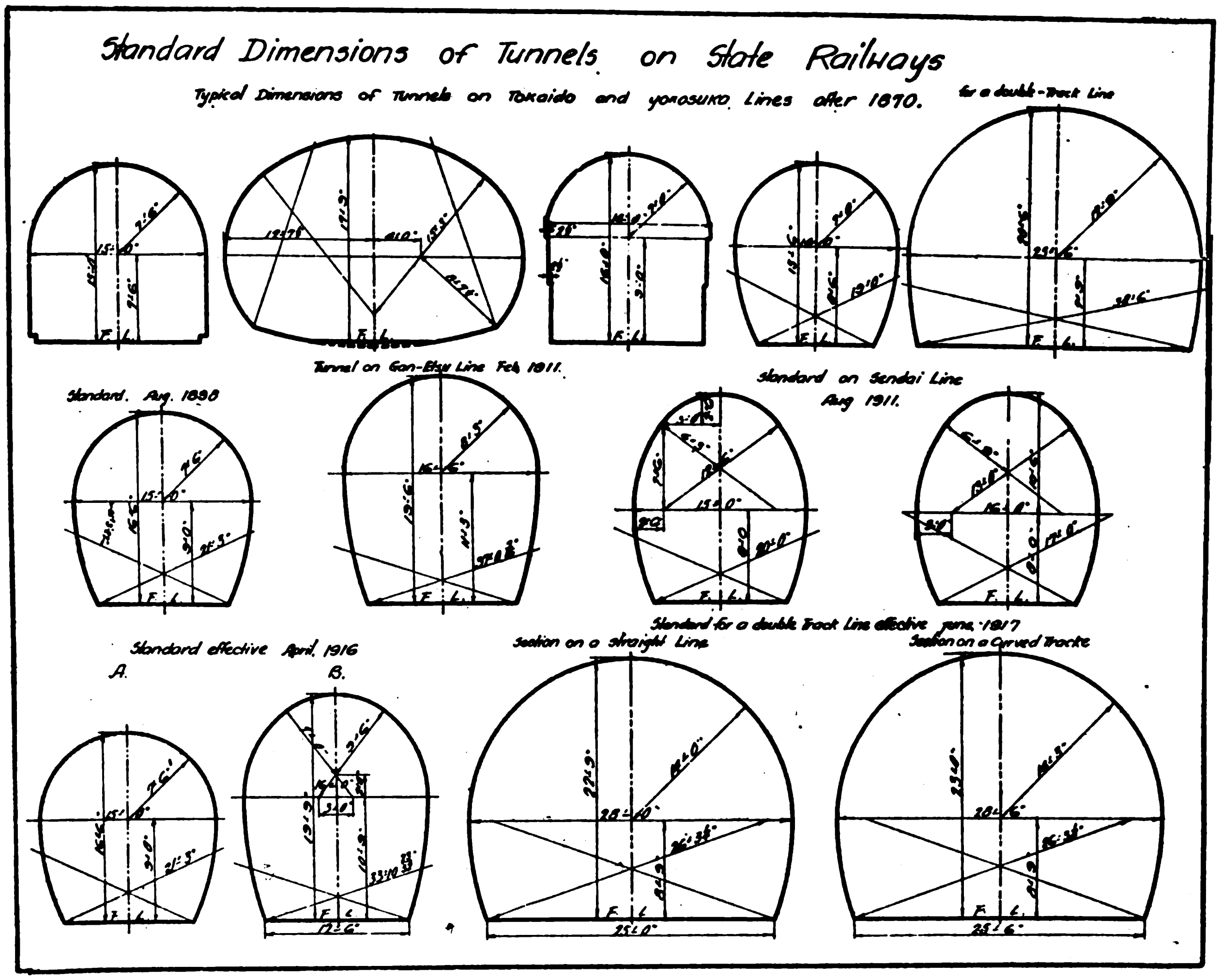
Kushiro (Ochiai-Obihiro) Line.—The 17-mile section between Ochiai and Shintoku was one of the greatest engineering difficulties. Here the line is carried over the rugged, elevated borders between the two provinces, Ishikari and Tokachi, the peak of the range, 1,760-ft. above the sea-level, being pierced by a tunnel of over 3,000-ft., in order to maintain the maximum grade of 1 in 40 and the minimum curve of 9ch. radius. The region is under snow and ice for the greater part of the year and is marked by very rigorous weather throughout. Four years and a half were spent in the boring of the tunnel, work being seriously hampered by the rock formation combined with the effusion of water, so that it was impossible to carry out excavation at any greater rate than 3-ft. a day. There had also to be provided at an altitude of 1,758 feet above the sea-level an embankment 150-ft. high for a distance of 10 chains.

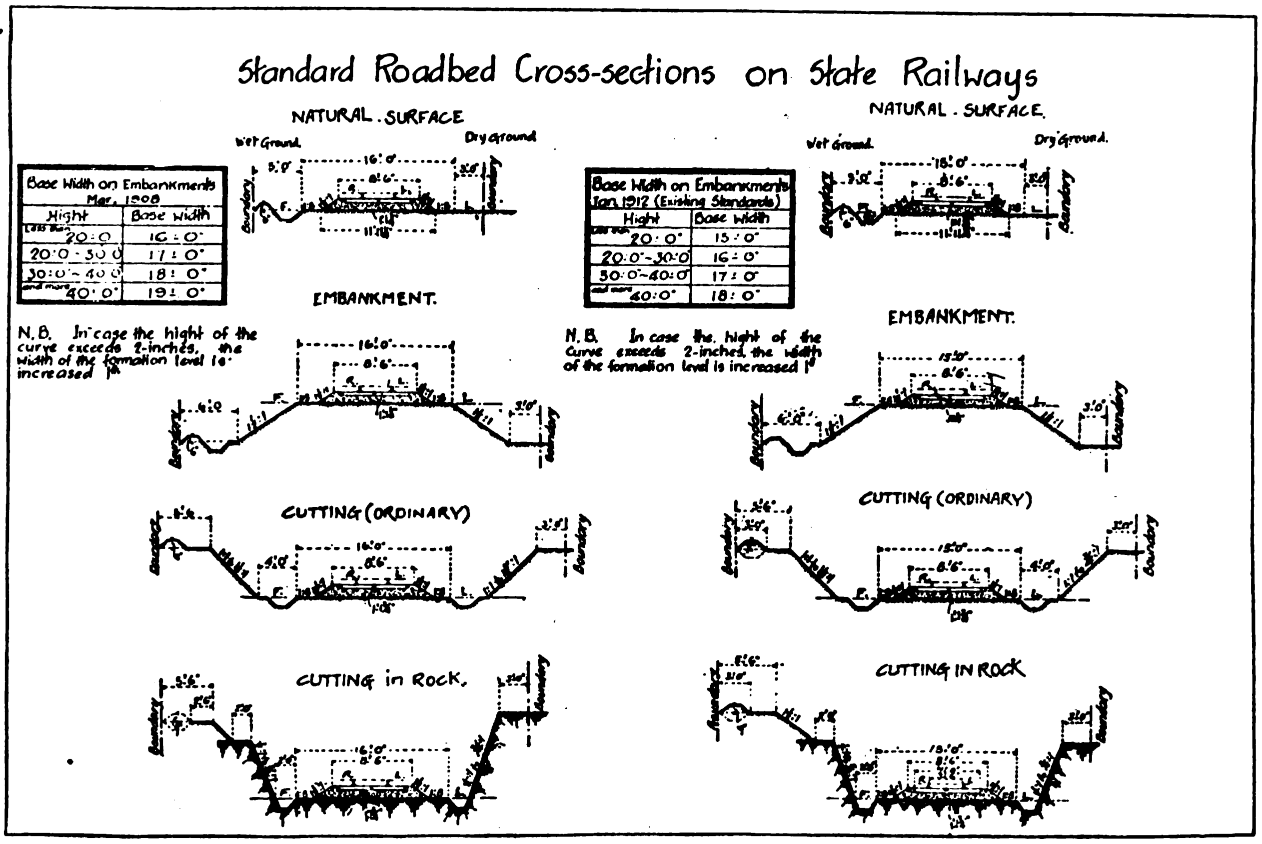
Abashiri (Ikeda-Abashiri) Line.—The line traverses rolling country, which is very rough at places, particularly on the border between the two provinces, Kushiro and Kitami, where the line zigzags along a narrow and rugged valley on a gradient of 1 in 50, until it reaches a point 1,290-ft. above the sea-level. Tunnelling work was heavy, and

serious difficulty was encountered in excavation, owing to the weak and treacherous nature of the strata, which demanded a solid system of timbering.

Shimofurano (Takigawa - Shimofurano) Line.—This line of 35m. 63ch. which forms a direct and shorter link between the Hakodate and the Kushiro Lines run in a southeasterly direction along the narrow, cliffy bank of the river Sorachi, a tributary to the Ishikari. The country traversed by the line, is exceedingly rugged, heavy earthwork being required to carry the line over the deep ravines of the river at several places. The bridges built on this section are mostly high, the formation level of the line reaching, in one case, 80-ft. above the river bed, with the embankment 50-ft. high. The boring of Yunoshita tunnel was another engineering difficulty. The tunnel goes through the cliffs washed by the rapids of the river Sorachi, and the shore had to be protected with concrete or pitching fences against the collapse of the mountain slopes. Then the wash of the current was guarded against by means of rubble mounds strengthened by huge superimposed concrete masses.

Soya Line (Asahigawa - Wakkanai). — The range of mountains which separates the province of Teshio from Kitami is passed by a tunnel of 1,233-ft. in length, the boring of which was seriously impeded by the prevalence of loose strata and the heavy pressure of the earth, coupled with the difficulty in conveying brick and cement, owing to the absence of any available road.





Nemuro Line (Kushiro-Nemuro).—Another 90-mile trunk line now in progress in the Hokkaido is the Nemuro Line, an extension of the existing Kushiro Line.

The Flood Problem at Canton

An Expenditure of $35,000,000 will, in the Opinion of an Expert, Solve Flood Troubles in the Canton Delta

THE preparation of data in connection with the scheme of conservancy to secure and maintain proper control of flood waters within the West, North and Canton River basins continues, and Report No. III of this series, has now been issued by the Board of Conservancy Works of Kwangtung, of which Mr. Tsao Yu-ying is the Director-General. Report No. III is on the North River System, and is by Captain G. W. Olivecrona, the Engineer-in-chief of the Board, who makes an appeal for action without delay since attention to the North River constitutes the first stage of work which will ameliorate the deplorable flood conditions prevailing throughout the Delta, though the conclusive effect upon the floods may not be expected before the proposed improvements of the West River are also completed.

To carry out the works on the North River deemed necessary by Captain Olivecrona, some $10,900,000 (Hongkong currency) will have to be spent over a period of about eight years, while to control effectively the West, North and East Rivers a sum of $35,000,000 (Hongkong currency) is estimated as necessary, one million in excess of the estimates of 1915. Of this total amount $19,500,000 would be spent on the West River, $10,900,000 on the North River, and $4,600,000 approximately on the East River.

The means needed to control the floods in the North River are, broadly speaking, of the same nature as those proposed for the West River, with the addition of control sluices in some of the North River outlets with the view to abolish the dykes along those channels. This measure was not needed in the West River, where the total floods are proposed to be confined within the dykes in the main river.

The investigations now completed have led Captain Olivecrona to the following conclusions :

Protection against inundation from floods passing down the North River cannot be sought by lowering the flood level, but can be obtained by confining the floods within the limit of the present and some new constructed dyke systems in definite channels, and by a system of control sluices and flood-gates. For the success of the scheme it is required that the dykes be partly reconstructed, generally improved and fully maintained to a proper elevation.

The need of a speedy solution of the Kwangtung flood problem becomes manifest for every year that passes, the dyke systems gradually getting weaker and showing now a less resistance against floods than they did when the Board began its investigations over four years ago. An ordinary summer flood as that of 1918, which may occur in any year, is already dangerous to the dykes, and will become more so, as the dykes lack upkeep.

Although the need for flood control in the West River is as pressing as that in the North River, Captain Olivecrona is nevertheless of the opinion that the latter should be attended to first of all for the reasons that the North River floods threaten highly cultivated and densely populated regions with large commercial and administrative centres as Canton. Fatshan, Chanchuen, etc. ; by using a relatively small amount of money, an effective flood control, immediately perceivable, would be inaugurated at the beginning of the execution of the scheme; supervision of the works, and safeguarding against interference from outside influences would be easier originated near the centre of administration, than the far away districts of the West River, and the population in and around Canton, being closely concerned in the regulation, are more likely to grasp the advantage of introducing modern flood control than the natives living in more distant districts. Introduced in one place, the modern appliances would readily be accepted in others.

According to available maps the total area of the region over which the water is spread out in case of inundation from the North and West Rivers is 10,550 sq. km., or 12,340,000 *mow*. Of this about 3,100 sq. km. represents mountains and rivers, and 7,450 sq. km. land, cultivated or fit for cultivation. Considering 75 per cent. of the last mentioned is being cultivated at present, we arrive at the figure 5,587 sq. km., or 6,536,800 *mow*, as representing the area on which the crops run the risk of being destroyed, should a heavy flood occur. This area does not include the region subject to inundation from the East River floods. The cost of eliminating this danger would amount to, in round figures, $4.60 per *mow* of cultivated land. Considering that one rice-crop represents a value of $25 to $30 per *mow*, a cost for necessary protection works of $4.60 is insignificant.

Captain Olivecrona estimates the time for completion of the West and North River schemes at fifteen years, during which time consequently the farmers should have to pay 30 cents per year and *mow* for flood protection works. Keeping in mind the losses inflicted by one single flood, as for instance that of 1915, when, according to a very moderate estimation, values of up to *ten million dollars* were destroyed, the population would, no doubt, take upon themselves the responsibility of paying a tax, provided guarantees were given, that the tax would be efficiently and well spent for the purpose intended.

The North River Problem

The North River, or Pei-kiang, is the second in size as to length and discharge, of the three main rivers of consequence draining the Kwangtung province, the West River ranking as the first and the East River as the third. It rises in the northern part of the province having its source on the southern slopes of the Meiling range, which latter separates the Kwangtung and Kiangsi provinces. The river flows at the beginning in a south-westerly direction which it keeps to Shiuchow, a distance of about 150 km. On Chinese maps this section of the river is called Tsengshui. At this point it makes an abrupt bend to the South and continues to run in that direction for some 250 km., where the Samshui Bend changes the direction to a south-easterly one.

Here the river enters the Canton Delta built up by the joint action of the three main Kwangtung rivers. The hydrographic aspect of the delta is very confusing, the channels forming a labyrinth of waterways in which it is difficult to follow the course of the special rivers, and to state the part each river takes in feeding the channel system.

The total length of the North River, measured from available maps, from its source to the sea along the Tamchow Channel amounts to 500 km. (740 Chinese *li*).

From Namyung, a city situated about 40 km. from the source, the river is navigable for small river craft not exceeding 0.90 m. draft the whole year round, though rapids and frequently shifting sandbanks make navigation even for boats of that draft difficult.

The greater part of the river flows through a mountainous country, the river valley sometimes being narrowed into gorges and sometimes widened to a width of some 5 km. and even more. Two of the gorges are especially conspicuous on account of their narrowness, namely the Mongtze and the Felai Gorges. Having passed the last mentioned gorge the river enters the plain, though in some places low hills and short mountain ranges still border the river bed.

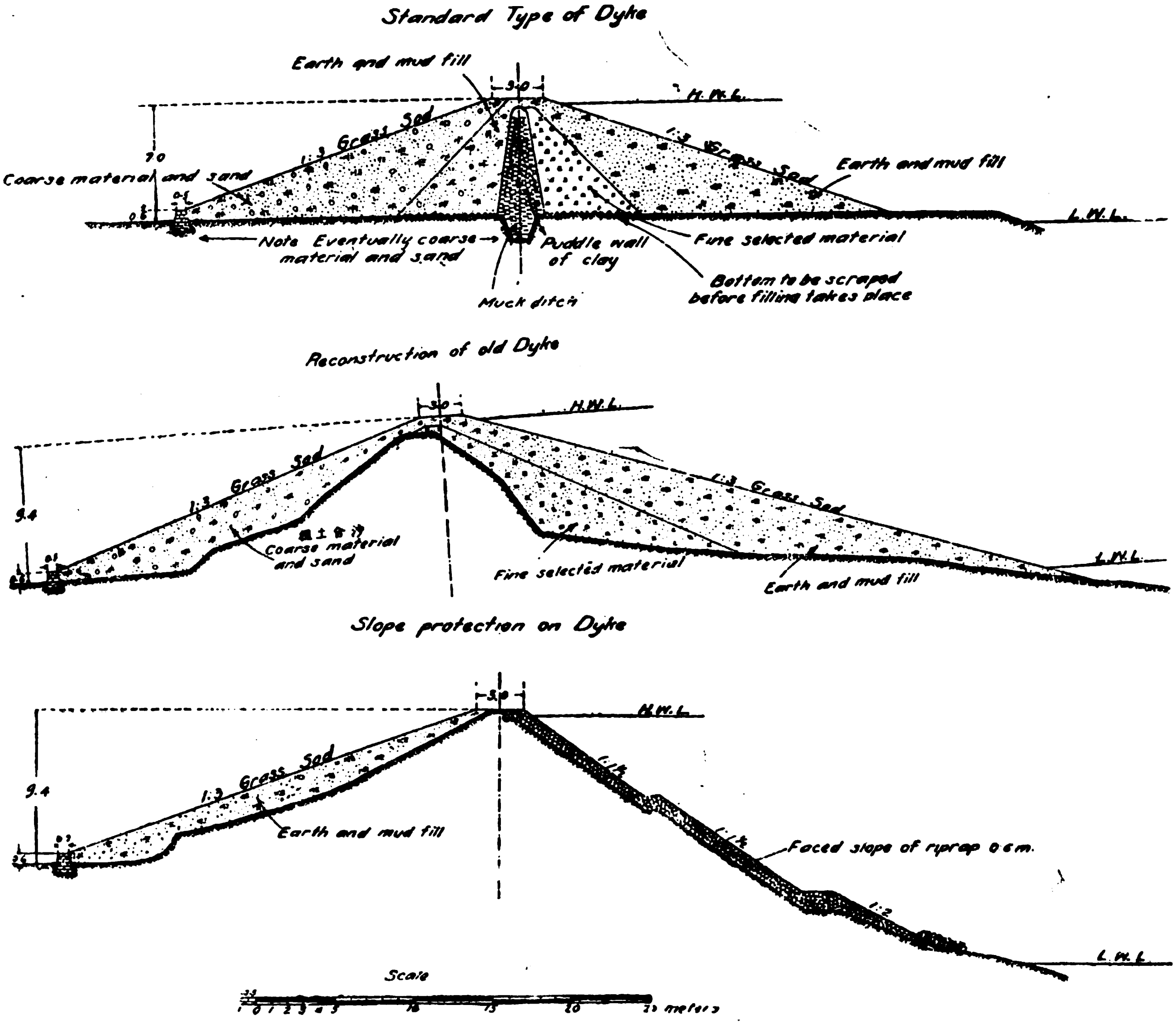
The main river receives during its course a number of tributaries, many of these being short and rapid streams, dried up during the dry season but during the wet season conveying a considerable discharge into the main river, and causing sudden rises of water level, though generally of short duration. The following are the largest tributaries, named as they in turn debouch into the main river, beginning from its source.

The lower course of the North River or the part of it below the Felai Gorge is through several channels connected with the West River and the Canton River systems. During certain stages of the water both the North and the West Rivers contribute to the Canton River system and through that to the sea. The North River water goes into the West River and vice versâ.

Above the Felai Gorge the river passes through a mountainous country. Several mountain ranges crossing the course of the river have been broken through, giving place to narrow

DRAINAGE BASIN OF THE NORTH AND THE EAST RIVER SYSTEMS

gorges confining the river within their steep walls which at flood times become rapids, dangerous to navigate. Between the gorges the river flows through a country of foot hills, many of which are cut out in fantastic shapes, giving to the country an aspect of unique grandeur. Limestone is here dominant and coal, together with other mineral deposits, occurs frequently. The valley sometimes widens into undulating land where cultivation is carried on with advantage during the low-water season. The hill-slopes are covered with grass and brushwood and scattered over with thin forests of pine and leafy trees. A reckless deforestation is at present going on, this not being confined to the trees only but also destroying the brushwood and even the grasscover.



DETAILS OF DYKE CONSTRUCTION

The river-bed is filled with sandbanks between which the channel meanders, forming the usual concaves and convexes, characteristic of rivers, with shallow crossings of only a meter in depth or even less at low-water. The deposits seem to consist of a heavier material than that found in the West River valley.

Immediately above the junction of the Linchow-kiang the North River passes through the Mongtze Gorge, this having a length of 4 km. and a width at its narrowest part of only 100 m. The average depth is 9 m. at low-water but this increases to 27 m., at high-water.

Another break through is found 20 km. below the Linchow River at Lianglu Hap, formed by protruding rocks, but this is of inconsiderable length.

The largest of the gorges is the Felai, situated 16 km. above the city of Tsingyun. It has a length of 9 km. and is bordered by mountains reaching a height of 500 to 600 m. The depth measured at its lower end was 4 m. at low-water and 14 m. at high-water. The narrowest part at low-water was 130 m.

The gorges control the discharge above, each in its place and form insurmountable obstacles which make fruitless any attempt to lower the high-water level by extending the cross-section. No dyke systems of consequence are met with along the main river above the Felai Gorge, the shores generally ascending in a steep gradient from the river-bed.

No survey in detail has so far been made above the Felai Gorge, but below it the investigation has been completed and a closer description of the river-bed in that part can therefore be given.

Passing the Felai Gorge the river has left the mountainous region and, speaking generally, has reached the plains. The shores below the Gorge are protected by dykes, and continue to be so with a few exceptions down to the mouths. The slope of the plano from the Felai Gorge down to Taichow averages 1 in 12,000.

The dyke systems along the river are in some places of a substantial construction and well maintained, in other places of insufficient strength and in a state of dilapidation. To the first category may be assigned the dykes on the left side between Shekkok and Samshui, to the latter those above Shekkok on both sides of the river. Here, however, as well as along the West River the dykes are characterized by their lack of homogeneity in construction, a dyke having been found for a long distance without fault suddenly showing a weak spot, which neutralizes the effectiveness of the whole system. These irregularities are prominent below Samshui and especially in the dyke systems bordering the many creeks and channels branching out from the main river. As the conditions now are these inland dykes necessarily must be constructed and maintained to the same strength and height as the main dykes along the river proper. A closing of the channels during flood times would naturally remove the strain from these dykes, and considerably lessen the cost of their maintenance.

In the lower delta dykes are often constructed in double lines, the one nearest the river being of latest date. The riparian owners have thus illegally encroached upon the original high-water section to the detriment of a speedy run-off of the floods. Furthermore, the shore outside the dykes, being without exception planted with mulberry trees that cause a slackening of the current followed by settling of sedi-

ment, grows in height and adds to the encroachment upon the section.

Means for Regulating the Floods

The floods in the North River are caused by heavy rainfall in the upper part of the drainage basin, beginning at the end of March, intensified by the summer typhoons and ceasing to be dangerous in the beginning of September. During this time the water in the upper course rises and falls with great rapidity, but is in the lower course kept at a high elevation during long periods.

The dykes, constructed along the river banks to prevent flooding of the adjacent low-lying land, are at present neither high enough nor of sufficient strength and homogeneity to keep out the water, and are subject to overtopping or undermining when extreme floods occur. The heaviest flood recorded appeared in 1915 when the water rose to a height of 1.2 m. above the dykes in the Tsingyun region. The dykes further down at Suikongkai, Lupao, and other places gave way and the waters flooded the plains to the East, laying Canton and Fatshan under water. As long as the Lupao and Sainam Creeks are left open the yearly summer-floods will always inundate a part of the plains. In the year 1918 the flood level at Tsingyun stopped 1.6 m. below that of 1915, but still Canton was flooded for some time. These two channels are insufficiently dyked, but even if they were properly dyked nothing but closing them during high stages in the North River would save Canton and the surrounding country from inundation.

The means, which have been taken under consideration to be employed to regulate the run-off in a way that prevents inundation of the land, may be classified as follows: Afforestation; storage and retarding reservoirs; cut-offs and outlets; and confining the floods within embankments (dykes).

The excessive rainfall in the North River basin produces a maximum run-off of 15,500 cu.m. per second, a volume which consequently has to be conveyed to the sea, if inundation should be avoided. Reforestation as a means to lower the present maximum floods is not to be relied upon. Even if it should have some influence on the maximum flow, such effect would not be felt until after several tens of years. Reservoirs and retarding basins, if possible to construct, would only give a very slight relief from floods, and would in time lose their storing capacity on account of silting. Cut-offs and dredging of the river bottom, would not alone be effective to lower the floods to a level that would give permanent security against over-flow of the present dykes. The immediate need is a regulation scheme that provides for a speedy relief to the suffering regions, and which can be executed within a reasonable time.

In order to limit the length of main dykes to be maintained, Captain Olivecrona proposes to close all channels now branching off from the main river by control sluices or flood gates, only permitting so much water to escape into these channels as will not be dangerous to the surrounding land. The general principle may be expressed in the following words: Restricting the floods within stable limits by raising the dykes, concentrating the flow in a few main outlet channels, and preventing the water from entering the tributary channels during flood times.

The project here laid down deals entirely with the control of excessive floods, but does not enter upon any scheme to regulate the low-water channels.

Estimates of Cost

In calculating the following cost Captain Olivecrona generally used from 10 to 20 per cent. higher unit price than is now paid locally for the same kind of work; but has presumed that the proposed work should be carried out with greater thoroughness than is at present the custom when employing Chinese contractors.

The greatest cost comes in the heightening and strengthening of the dykes. The earth-work has been calculated from a great number of cross-sections taken of the dykes, from the Felai Gorge down to Taichow.

The cost of the control sluices are approximate pending estimates of the iron structure from abroad; for estimating the cost of the flood-gates, figures from actual constructions have been used as a basis.

The old, as well as the new, dykes should be constructed with a top width of 3.0 m. and with slopes of 1 vertical to 3 horizontal. The volume has everywhere been calculated with these figures in mind. When local conditions warrant, the slopes may be changed, though never to a steeper gradient than 1 vertical to 2 horizontal if the sectional area is maintained. Captain Olivecrona proposes to support the inner dyke toe by a small stone wall, which at the same time will serve as a boundary line, and prevent the toe from being tampered with by the farmers. The slopes should be sodded or turf clad, and the growth of reeds, brushwood or trees be absolutely prohibited on the dykes.

The following is a summary of estimates in Hongkong currency :—

1.	Control sluices		$850,000
2.	Floodgates	$705,000	
	Irrigation Pipes	173,550	878,550
3.	Cutting of canal at Lupao		677,000
4.	Repairs of old dykes	3,172,400	
	Construction of new dykes	1,565,100	
	Demolition of old dykes	85,000	
	Removing houses	150,000	
	Protection of dyke slopes...	60,000	
	Cuttings in the riverbed	429,000	
	Revetment walls	634,050	6,095,550
5.	Closing junction channel		149,000
	Total Cost of Works		$8,650,100
	Purchase of land occupied by new dykes ...	$717,900	
	Administration and supervision about 12 per cent. on cost	967,000	
	Miscellaneous, and not provided for above, about 6.5 per cent. on cost	565,000	2,249,900
	Grand Total Cost		$10,900,000

The following estimated quantities indicate the amount of work to be executed :—

Repairing old dykes, earthfill	cu.m.	10,859,000
Construction of new dykes earthfill	,, ,,	5,852,000
Cuttings, including canal, earth to be moved... ...	,, ,,	4,345,000
Revetment walls of stone	run. ,,	337,800
Control sluices	pcs.	3
Floodgates	,,	39
The total quantity of earth to be moved	cu.m.	21,006,000

Realizing that the financing of the scheme will meet with difficulties, and considering that funds may be appropriated only at irregular intervals causing perhaps a suspension of work during certain periods, Captain Olivecrona suggests that the work be done in stages. The first should be the construction of control sluices at Sainam, Lupao and Shahow, the completion of which will require a time of two consecutive dry seasons but is to a certain extent dependent upon the facilities with which the necessary iron structures can be obtained from abroad. The total cost is estimated at $850,000.

The second stage should be the completion of all floodgates and pipe sluices and repair of old sluices, which work should be extended over the third and fourth dry seasons and will amount to $878,550.

The third stage should be the opening of the short cut at Laklow during the fifth dry season at a cost of $677,000, the fourth stage comprising the carrying out of all earthwork

for raising and strengthening old dykes and the construction of new ones; the cuttings in the river bed and the revetment walls. This could naturally be undertaken at any previous period as funds become available; but under supposition that funds are not forthcoming before the first, second and third stages are completed, a period of three dry seasons, the sixth, seventh and eighth, has been allotted for these works. The cost has been estimated at $6,095,550.

The fifth stage should be the closing of the Samshui Junction channel. This should be done as the last stage of work after everything is completed in the North River as well as in the West River. The work can be done in one dry season and will amount to $149,000.

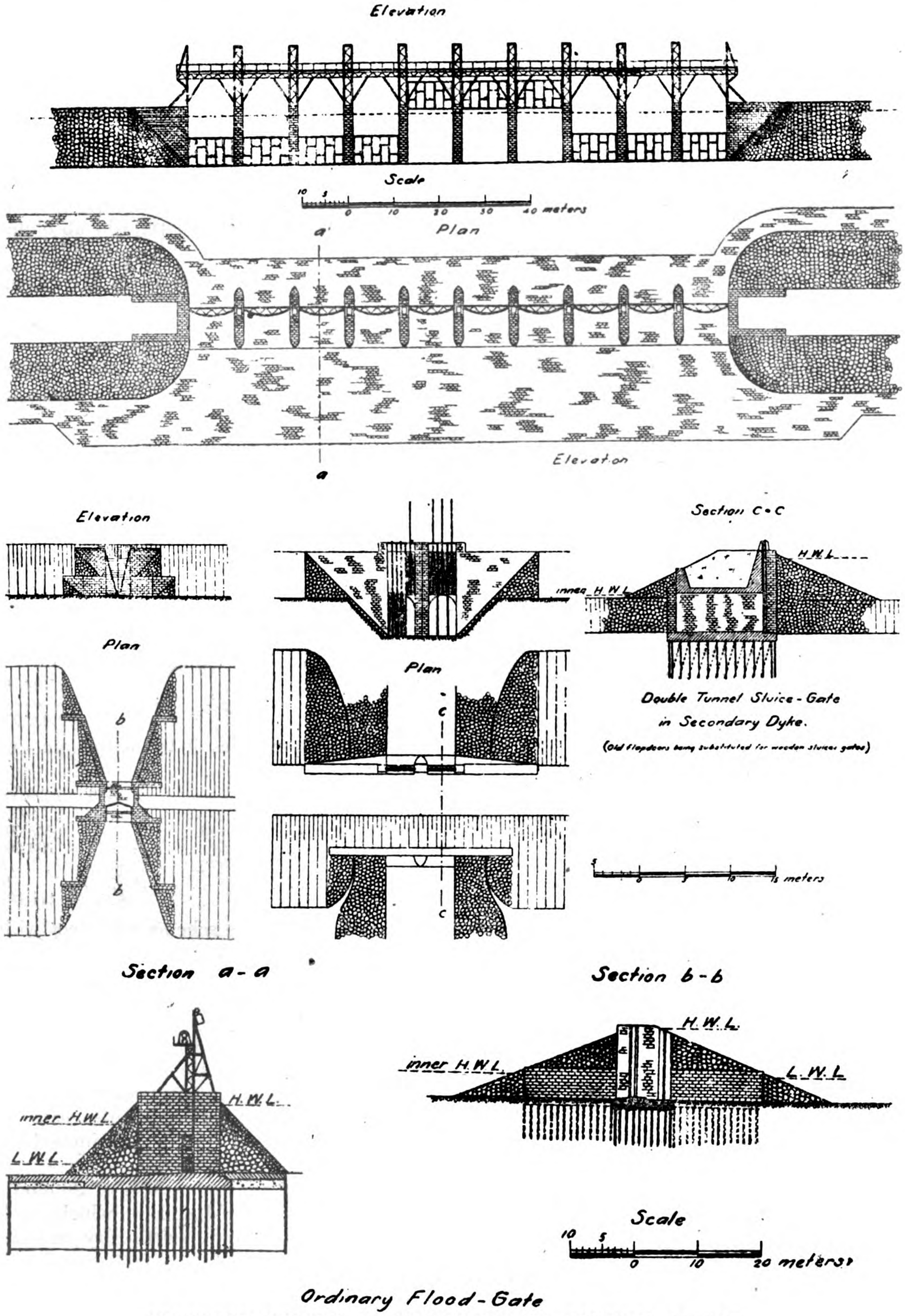
Necessity for Control of Funds

Works of such magnitude as are here proposed and which call for the appropriation of considerable funds for their execution, should from the beginning be put under rigorous control. Otherwise the money will be wasted and only an inferior grade of work will be obtained. Past experience has proved the present system of supervision, consisting of independent committees in charge of given sections of dykes, to be far from satisfactory from the point of efficiency. Often these committees work at cross purposes for purely local gains, and much labor and money has in this way been lost. The rivers and the different conservancy works are dependent one upon another, and, therefore, their control should be directed from one central organization possessing technical and administrative qualifications to deal with the problems that may arise. Such organization does not exclude the participation of the people themselves in the work of bringing the flood problem to a satisfactory solution. The dyke committee as representatives of the people should still supervise all secondary dykes, but should leave the upkeep of the main dykes entirely in the hands of the central organization. The committees would be subject to the central organization, and in questions of expropriation of land, the removal of houses, levying of workman, etc., etc., their authority and their knowledge of local conditions would render valuable service to the central organization.

In accordance with the above-mentioned principles the sole management of all the main dykes with their control sluices, flood-gates and irrigation pipes should be in the hands of the Board of Conservancy Works, which, as already organized, is qualified to execute the proposed schemes, and to be responsible for the future maintenance of the dykes.

The Board should be invested with authority to:

(a) Employ the funds that may be available for conservancy purposes according to approved plans;



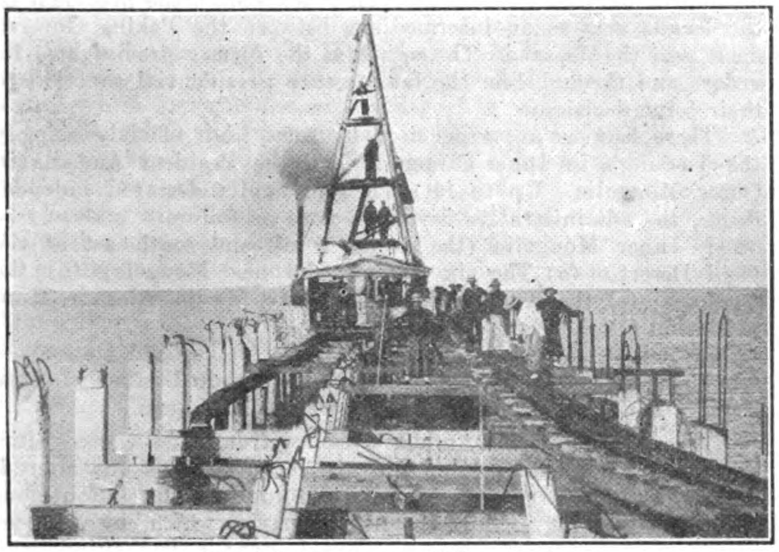
PROPOSED GENERAL ARRANGEMENT OF CONTROL SLUICE

(b) Appropriate lands, houses, waterways and other property, private or common, that may be necessary for conservancy purposes;
(c) Organize the works and to decide upon the order in which they shall be executed;
(d) Command means of transportation from the Government's Transport fleet; and,
(e) Requisition necessary numbers of the Government forces to be stationed at the working places, if needed, for the protection of the works.

It is the opinion of Captain Olivecrona that if these lines are followed, with such changes as time and the progress of the work may demand, the flood problem should, within the time proposed, be brought to a satisfactory solution.

Concrete Pier at Lungkow

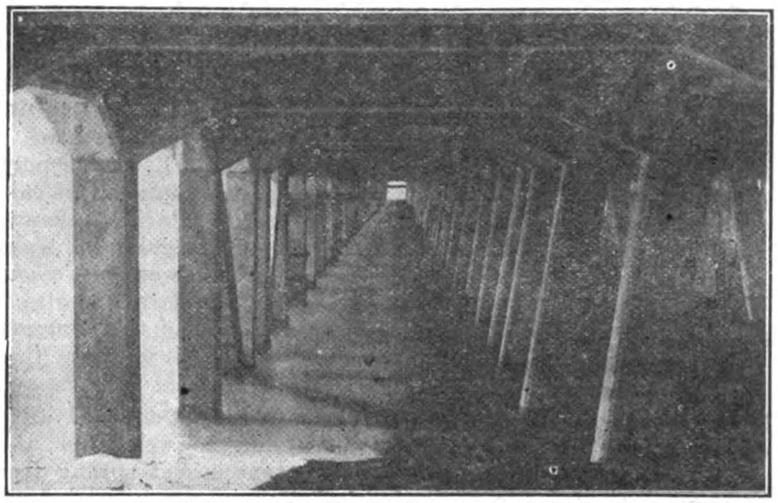
The development work which the Civil Governor of Shantung Province, General Chu Yin-kwang, is trying to push through draws attention to the efforts being made to establish a port at Lungkow. In previous issues we have given details of this



The Pier in Course of Construction

project, and also mentioned that in order to facilitate shipping a pier was under construction. That pier has now been completed, and we are able to give herewith some photographs of the work. The contract was signed in September, 1918, with Messrs. Andersen, Meyer & Co., and the whole work was completed within schedule time. The pier is built throughout of reinforced concrete and comprises an approach approximately 300-ft. long, while the actual pier extends 800-ft. from the shore line. It is approximately 30-ft. wide and consists of a heavy reinforced concrete deck resting on approximately 250 reinforced concrete piles varying in size from 12-in. by 12-in. by 40-ft. long to 14-in. by 14-in. by 50-ft. long. The driving of the piles was a difficult task, the subsoil proving extremely hard, while the handling of the piles was a delicate job since these weighed up to 10,000-lb. each and had to be carried by coolies from the establishment on

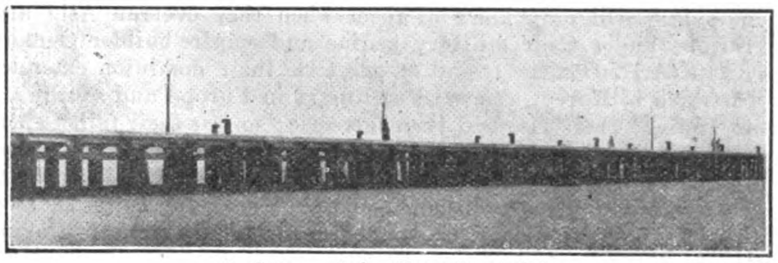
Laying the Reinforced Concrete Deck of the Pier



View under Deck of Completed Pier

shore where they were cast. The piles were driven by a steam hammer weighing approximately 3,000-lb., the pile driver and boiler being placed on a truck moving on rails on a timber scaffold. The whole work was handled by Messrs. Andersen, Meyer & Co.'s organization, and no subcontractors were employed.

At times up to 500 men were on the pay-roll, under the resident engineer, Mr. P. C. Pedersen, who was ably assisted by Mr. H. Ching and Mr. K. T. Yao. The work was designed and carried out under the charge of Mr. E. Park, B.SC.C.E., head of the Concrete Construction Division of Andersen, Meyer & Co.



A View of the Completed Pier

The new wharf is connected with the old town of Lungkow, where goods from the interior are brought, by a light railway. Godowns have already been erected near the wharf for the storage of merchandise awaiting shipment. The wharf was officially opened for commercial use on January 4, the company announcing that it would waive wharfage fees for three months.

Standardisation of Chains

The unprecedented demands of the Allied Governments for driving chains for all purposes during the period of the war, made it necessary for the British Driving Chain Manufacturers to collaborate in order to use the whole of their resources to the best advantage. As a result, the needs were met, both as regards quantity of production and quality of products. The benefits accruing from co-operation were so marked, that a permanent Association has now been formed. The main object of the Association is to foster and develop the use and application of chain gearing, the value of which is not yet fully appreciated by power users. In view of this, and in face of competition with other forms of transmission, it is the policy of the Association to keep down the cost of chain driving to the user.

This will be attained by: (1) Standardisation of chains, wheels and chain wheel cutters to ensure interchangeability. (2) Elimination of unnecessary sizes of chains, which have been a source of confusion and difficulty to the user. (3) The increase in output resulting from the above. (4) The more comprehensive research made possible by co-operation.

Further, it is confidently anticipated that the policy of the Association as set out above will enable British Driving Chain Manufacturers and their customers to secure a larger share of overseas business than hitherto. The Association is composed of Alfred Appleby Chain Co., Ltd., Tilton Road, Birmingham; Brampton Bros., Ltd., Oliver St. Works, Birmingham; "The Coventry" Chain Co., Ltd., Spon End Works, Coventry; Hans Renold, Ltd., Didsbury, Manchester.

The Cancellation of Mongolian Independence

The voluntary cancellation of autonomy on the part of the Mongolian Government in November, 1919, and the far-reaching significance of this action direct public attention once more to this little known part of the Chinese Republic. From the point of view of China this decision of the Mongols cannot have been better timed; and if the Shantung award of the Paris Conference has been disappointing, the cancellation of Mongolian independence will in some measure salve the nation's wounded *amour propre*. On the other hand, the Mongols themselves will also be the gainers by the momentous decision, in view of the numerous intrigues and external machinations to draw them away from the fold of the Republic.

It was in 1911 that China's dependency declared its independence. The consensus of foreign opinion is, however, that the secession movement was never spontaneous but sprang from foreign instigation since the identity of the power interested was soon revealed in the series of agreements concluded in regard to the seceding dependency but primarily in favor of the instigating party. That being the case, the unnatural movement could not last long; at best it could not survive the political collapse of the power, Russia, which has exerted the compelling pressure all along—an assertion which is now borne out by present developments in Mongolia. The truth of this statement has, indeed, taken eight full years to manifest itself, but the testimony is none the less eloquent.

The Mongols are descended from the Hsiung Nu tribes, first known in the Han Dynasty (B.C. 206—A.D. 25). Since then they have played a not unimportant part in China's history. The outside world only knew of them when they overran Asia and Europe under their military genius and empire-builder Genghis Khan (A.D. 1162-1227), and at one time their dominion extended eastward to Korea, westward to Russia in Europe and southward to India. Their rise had been meteoric; so was their fall. There were no two or three Genghis Khans, and the huge empire soon fell to pieces. In China they were able to hold sway for only 88 years, and on the establishment of the Ming Dynasty (A.D. 1368-1644) they were driven back once more to Mongolia. During the next two centuries not much was heard of them, until the Manchus were invited into China Proper by an indiscreet soldier-statesman of the last Ming emperor. The rising power of the Manchus compelled respect and the princes first of Inner Mongolia and then of Outer Mongolia, swore allegiance and placed themselves and their tribes under Manchu protection. Thus most of the Mongol chieftains became vassals of the Tsing Dynasty of their own free will. Later, in the middle of the 18th century, through additional conquests, the entire region now constituting Mongolia was brought within the sway of the Manchu reigning house.

The system of administration is tribal in character. It is several centuries old and was left undisturbed even by the Manchus. The principal characteristic of the whole system is the "Ho-shun" or, in Chinese, "Banner." At the head of each Ho-shun is a "Jassak," who holds the Ho-shun practically as his own fief. His office is hereditary, and the succession of the new Jassak is confirmed by the President of the Republic. Even today the Jassaks retain the titles of "Ts'ing Wang," "Pei-leh," "Pei-tzu," and Kung," etc., conferred upon them by the Manchus. Or, a Jassak may be merely a first-class "T'ai-tse."

After the Ho-shuns, come the Aimaks. According to Colonel Baronoff's vocabulary of Mongol terms, an Aimak "is an ancient Mongol name for the fief which forms the inheritance of one princely family. Thus the Aimak is a collection of one or more principalities bound together by a common descent and historical past. Originally it was the possession of a single prince, their first ancestor. In course of time it became divided up into several independent principalities; nevertheless, the connection between the latter was not broken and the prince senior in the family is still considered the head of the Aimak." At present the Aimak, as an administrative organ, has sunk into historical insignificance, its power having been transferred to the League, so that the senior prince of each Aimak has now really no duty or authority as such.

The largest administrative unit is the league, a device said to have been originated by the Manchus. In Outer Mongolia the four leagues are made to coincide in composition with the four Aimaks, while in Inner Mongolia the twenty-four Aimaks are grouped into six leagues. The Jassaks of a league meet together in a council or Diet and elect a president for the league. This elective appointment is then confirmed by the Peking Government.

Besides meeting to elect a president, the Diet of the league also has other functions to perform: "All the Jassaks of the league meet together periodically to settle (1) judicial affairs in which persons of different Ho-shuns are interested, and (2) economic and administrative matters concerning the whole league and matters connected with the statistics of the league. The president of the league sees to the execution of the Diet's decisions. He has no power to interfere with a Jassak in the local administration of his own "Ho-shun." In other words, the president of the league acts as an intermediary between the Peking Government and the Jassaks. Through him the former promulgates its orders and through him the later secure presidential sanction to their joint decisions.

These leagues are supervised by some high officials—namely the Tu-tung's in Inner Mongolia and the Resident Ambans in Outer Mongolia. Up to 1911 when Mongolia declared independence, the administrative divisions were as follow:

I—Inner Mongolia (the region south and south-east of the Gobi Desert:—(*a*) The six leagues of Inner Mongols; (*b*) the Chahars; (*c*) the Kueihuach'eng Tumets; (*d*) the Alashan Mongols; and (*e*) the Estingol old Tanguts.

II—Outer Mongolia (the region north of the Gobi Desert):—(*a*) The four leagues of Khalkas; (*b*) the Kobdo District; (*c*) the Altai District; and (*d*) the Tannu-Urianghai Lands.

When China in 1913, under pressure from Russia, recognized the autonomy of Outer Mongolia, the latter's status was altered, coming under the rule of its Living Buddha. But Autonomous Mongolia did not include the Altai District which, by a recent Presidential mandate, was elevated into a Tao circuit and amalgamated into the neighboring province of Sinkiang. The administration of Inner Mongolia has always remained practically the same, and the various divisions are under the separate supervision of the governors respectively of Kansu, Mukden, Heilungkiang, and the Tut'ungs of Jehol, Kalgan, Suiyuanch'eng and Kueihuach'eng.

Embracing an area of 1,367,900 square miles, Mongolia constitutes one-third of the territory of the whole Republic, being slightly smaller than the 18 provinces put together. Bounded on the north by Siberia, on the south by the provinces of Kansu, Shensi, Shansi, and Chihli, on the south-west by Sinkiang (New Dominion), and Manchuria on the east, it is a table-land with three chief divisions:—(*a*) A high plateau of 3,005-5,000 feet in the north-western corner; (*b*) A central plateau, called the Gobi Desert, extending north-west to south-west for 1,000 miles, thus separating Outer from Inner Mongolia; and (*c*) a fertile, undulating and in some places thickly wooded region on the south and south-east of the Desert.

Excepting the Gobi region, the country is fairly well watered and here and there, especially in the mountain-plateau, lakes are scattered. The climate, however, is subject to extremes of both heat and cold. For example, in the Desert a furcoat is required after a rain even on a June mid-day, but the next day it may be excessively hot. Because of these climatic vagaries, most of the lakes are often dried up, but from them a considerable quantity of salt is obtained. When water is scarce, it can be easily had by sinking wells to a mere depth of 20 to 30 feet. For the most part the land is admirably suited to stock raising, and the regions north of Kalgan and near Urga, the capital city, are good for planting oats, millet, buckwheat, and even rice.

And in the so-called Desert itself are large areas of grass land. Consequently, an American traveller recently testified as follows: "The chief impression of the great country lying between Kalgan and Urga and beyond is that it is like the prairies of Nebraska and Texas with 100 per cent. better potentialities than exist in the great west of the United States. There is more water on the Mongolian table-land than on the Nebraskan or Texan prairies, and conditions are easier."

The Mongols are, as of yore, a nomadic race, and it is only recently that they have taken to a semi-settled sort of life. They live in primitive yurts or felt tents, which can be easily folded and packed away. Through habit and experience the various tribes have become more or less fixed to certain localities, and families are known to change their abodes twice a year, once in summer and once in winter. The state religion of the Mongols is Lamaism, an off shoot of Buddhism introduced into the country by the great Kublai Khan—the first emperor of the Mongol or Yuan Dynasty in China (A.D. 1280-1368). It has a remarkably strong hold over the people, so much so that at least one-third of the male population are said to be Lamas, or that one member of almost every family has at one time or other been a Lama of some order. Next to Lamaism, the celibate injunction of which is chiefly responsible for the country's reduced population, the principal occupation of a Mongol is stock-raising. Consequently a man's wealth is computed by the number of sheep, cattle, horses or camels he possesses. A Mongol and his horse are inseparable companions, so he will never walk beyond a few hundred yards—a fact which explains his awkward gait in walking.

Not much is known accurately of Mongolia's resources, beyond the fact that it is rich in fur-bearing animals, such as wolves, foxes, hares, squirrels, etc., and also in vast areas of pasture land. A foreign expert, however, has recently estimated that Inner Mongolia alone contains 353 mines, of which 89 are gold mines, 23 silver, 63 copper, and iron, and 127 coal mines, in addition to 51 containing both gold and silver. It is reported that Outer Mongolia is equally rich in mineral products and that the Russian Mongolian Mining Company has been working on gold in this vast region. Gold dust is found in large quantities even in rivers. The Mongolian fur trade is also profitable, and before the Great War the fur market in Leipzig is known to have had its whole supply from Mongolia. Finally, fishery promises to be a paying industry, and fish abound in all Mongolian rivers.

In regard to trade there is merely the interchange of raw materials. The simple, primitive Mongols are good horsemen and hunters, but know next to nothing about commerce beyond simple barter. Consequently, trade in Mongolia is carried on entirely by the Russians and Chinese, so almost everything is brought to them by the latter. Among their principal purchases are cotton fabrics, iron ware, woollen cloth, sugar and brick-tea; the last is their favorite. In return they offer sheep, cattle, ponies, camels, wool, hides, furs, etc. Every year they also export thousands of tons of salt and soda as well as some quantity of gold. Money, therefore, as a medium of exchange is not yet universally appreciated, except in large trading centres where gold dust, gold bars, lump silver, silver and paper roubles, and also silver dollars are in use. Tea in the form of bricks can also take the place of metallic coins. The main trading centres are Urga, the capital: Kiakhta, the chief gateway to Siberia; Kobdo and Uliassutai.

This, then, is a bird's-eye view of the country which to-day is once more attracting public attention. It is a knowledge which cannot be overlooked if one is to appreciate intelligently the developments of the last eight years.

We speak of the Mongols declaring independence in 1911 and of their returning to the fold of the Republic in November 1919, as if the one act of declaration and the other of cancellation were ordinary, commonplace things. As a matter of fact, all the evidence and presumptions indicate that Mongolia's act of session could never have been voluntary or spontaneous. If the people were too primitive even for the conduct of ordinary trade and commerce, it is unthinkable that they could have appreciated enough of politics to desire willingly to break away from the body politic of which they had been an integral part since the days when the Manchus entered the Great Wall. For, as already mentioned, their ancestors became vassals of the Tsing Dynasty of their own accord. On the other hand, the sins of the instigating outside party have never been more convincingly demonstrated. For this purpose the documents in black and white concluded between the parties will best speak for themselves. We will narrate these events in their proper sequence.

On October 10, 1911, the Chinese Revolution broke out. Taking advantage of this juncture the Khalkas expelled the Chinese Amban from Urga, declared independence and proclaimed the Hut'ukht'u, the Living Buddha, as their ruler. Strange to say, and against all healthy precedents in international law, this imperfect independence was immediately recognized by Russia, for palpable purposes. Just as the Republic of Panama was recognized by the United States of America less than a fortnight after it had revolted from Colombia, and then the agreement was concluded giving the recognizing state the right to build the present Panama Canal, so the Urga Government was recognized by Petrograd and the Russo-Mongolian agreement of October 21-November 3, 1912, concluded. The new Chinese Republic was in no position to resist Russia's "persuasions," and in the declaration as well as exchange of notes of October 23-November 5, 1913, this nation was constrained to recognize the autonomy of Outer Mongolia. The new relationship between China, Russia and Outer Mongolia was finally confirmed in the tripartite convention signed at Kiakhta on May 25, June 7, 1915.

We have said that in regard to the 1911 *coup d'état* at Urga, all unprejudiced authors agree that it was the work of "Russian instigation." In fairness to Russia it is admitted that there were other factors which might have conributed to the movement; for example, the Living Buddha was known to be striving for temporal power, and the Chinese Amban was known to have estranged the Mongol princes by his indiscretion and arrogance. But these are not enough to explain the riddle, and Russia would appear in a better light to posterity if she had not profited most from the various agreements and conventions signed between her and the Urga Government as well as between Petrograd and Peking.

For this reason we append the texts of (1) the Russo-Mongolian agreement and protocol, 1912; (2) Sino-Russian declaration and exchange of notes 1913, and (3) Russo-Mongolian railway agreement, 1914. They are now valuable for their intrinsic historic interest. The first is published in a British Blue Book (Parliamentary Paper, Cd. 6604), the translation having been communicated to Downing Street by the British Ambassador in Petrograd. The second is reproduced from the "American Journal of International Law," Supplement, October 1916, and the third is from the defunct "Peking Gazette," December 8, 1914.

A glance at these treaties and agreements will show the extent of Russia's privileged position in autonomous Mongolia. For example, neither Chinese troops were admitted into Outer Mongolia nor Chinese subjects were permitted to colonize her lands (see Russo-Mongolian agreement, Article 1, and Russo-Chinese declaration, Article 3). Russia promises to "assist Mongolia to maintain the autonomous régime which she has established as also the right to have her national army," and so are given numerous rights and privileges enumerated in sixteen articles and annexed to the agreement as a protocol. These consist of the right to reside and move freely from one place to another, to engage in any kind of commercial, industrial and other business (Article 1); the right to import and export, at all times, "without payment of import and export dues," and also "to trade freely in it without payment of any dues, taxes or other dues" (Article 2); the right to enter into agreement with the Mongolian Government respecting the working of minerals and timber, fisheries, etc. (Article 7); and the right to feed travelling cattle on pasturage lands assigned by local Mongolian authorities, free for a period of three months (Article 14), etc. Russia recognizes the right of Mongolia to construct its own railways, but "should the Mongolian Government desire to concede such (construction) rights to other countries, the Mongolian Government, for the sake of friendly relations with Russia, should discuss this matter with the Russian Government, before the former makes the actual concession, in order to ascertain whether the projected lines of railway would jeopardise Russian interests from an economic or military standpoint" (Article 5, 1914).

In other words, Russia was to enjoy in Outer Mongolia a position as favorable as that of China was the reverse. Not only were Chinese forbidden to colonize therein but those already there

were to pay all the taxes on internal trade. Therefore imports from this country paid a 5 per cent. *ad valorem* duty. Her commercial supremacy being assured, Russia proceeded to entrench herself also politically. And this was effected by the exchange of notes with China, 1913, which provided that "as regards questions of a political and territorial nature, the Chinese Government shall come to an agreement with the Russian Government through negotiations in which the authorities of Outer Mongolia shall take part." The results of such tripartite negotiations were embodied in the Kiachta convention signed on May 25/June 7, 1915, the text of which was published in the Far Eastern Review, June, 1915. This convention recognizes on the one hand the suzerainty of the Republic and on the other the autonomy of Outer Mongolia.

This then was Russia's gain: commercial supremacy in autonomous Mongolia and a concurrent right with the Republic to supervise the political relations of China's vassal. The dreaded march of the intrepid Chinese colonists into Russia was stopped and thus was created an effective buffer state between herself and the new Republic.

This is as far as official documentary evidence take us. But proofs of the colossus's designs were freely bruited about during the negotiations leading up to the agreements of 1912-1913. For example, in consideration of the protection offered by the Petrograd Government, the Hut'ukht'u agreed to let Russia build a railway from Kiachta, on the Siberian border, to Urga, the capital of autonomous Mongolia. At the same time the former sold a large number of obsolete guns discarded by the Czar's army and advanced a loan of one million dollars to the Mongols, the loan being secured on the revenue derived from the districts near Kobdo where Russian tax collectors were stationed.

China herself was not prepared to acknowledge defeat so easily. And as a bid for popularity the following Presidential mandate was issued, changing the status of former dependencies. "The five races in this country are entitled to equal treatment in the Republic, and the territories of the Mongols, the Tibetans, and the Mohammedans are parts of the same Republic of China. The Mongols, the Tibetans and the Mohammedans are all its citizens. There is no more distinction between them, as was the case during the Imperial rule. Thus no such name as 'dependencies' shall be used any more. Hereafter the Mongols, Tibetans and Mohammedans should live in perfect harmony so as to bring about a real union of the races into one. The Republican Government will not establish a department for dependencies, in view of the fact that they are to be treated equally as the other parts of the state, namely the interior provinces. All matters concerning these places will be included in the administration of Home Affairs," etc., etc.

Consequently the Li Fan Pu or Ministry of Dependencies was abolished and a Bureau of Mongolian and Tibetan Affairs created and placed under the immediate control of the Cabinet. In the Chinese Parliament Mongolia is represented by 27 members in the House of Representatives and by an almost equal number in the Senate.

As expected, it did not take the Mongols long to find out the real intentions of their Russian "protectors" and, except for a few "militarists" at Urga, the majority of the Hoshuns and Aimaks preferred to return to the fold of the Republic. Despite the efforts of the Russian government, the trade of Russian merchants was not able to compete with that of the Chinese. Because, it is said, on the one hand Russian goods were not so suitable to the Mongols' use and taste as those of the Chinese and, on the other, the former were out only to reap large returns within a short space of time. For example, a Russian merchant once complained that his profits had fallen as low as 20 per cent. Then came the War in Europe and, of course, the volume of Russian trade was reduced almost to *nil*. The onrushing tide of Bolshevism on the further side of the frontier serves to intensify the universal feeling of rejoining the Chinese Republic. Accordingly the following petition praying for cancellation of autonomy was despatched to the Chinese Government:—

"We, the Ministers and Vice-Ministers (here follow their names and ranks) of all the departments of the autonomous Government of Outer Mongolia, and all the princes, dukes, hut'ukt'us and lamas and others resident at Urga, hereby jointly and severally submit the following petition for the esteemed perusal of His Excellency the President of the Republic of China.

"Outer Mongolia has been a dependency of China since the reign of the Emperor K'ang Hsi, remaining loyal for over two hundred years, the entire population, from princes and dukes down to the common people having enjoyed the blessings of peace. During the reign of the Emperor Taokuang changes in the established institutions, which were opposed to Mongolian sentiments, caused dissatisfaction which was aggravated by the corruption of the administration officers during the last days of the Manchu Dynasty. Taking advantage of this Mongolian dissatisfaction, foreigners instigated and assisted the independence movement. Upon the Kiakhta Convention being signed the autonomy of Outer Mongolia was held a *fait accompli*, China retaining an empty suzerainty while the officials and people of Outer Mongolia lost many of their old rights and privileges. Since the establishment of this autonomous government no progress whatsoever has been chronicled, the affairs of government being indeed plunged in a state of chaos and causing deep pessimism.

"Lately, chaotic conditions have also reigned supreme in Russia, reports of revolutionary elements threatening our frontiers having been frequently received. Moreover, since the Russians have no united government, it is only natural that they are powerless to carry out the provisions of the treaties; and now that they have no control over their subjects, the Buriat tribes have constantly conspired and co-operated with bandits, and repeatedly sent delegates to Urga urging our Government to join with them and form a Pan-Mongolian nation. That this propaganda work, so varied and so persistent, which aims at usurping Chinese suzerainty and undermining the autonomy of Outer Mongolia, does more harm than good to Outer Mongolia, our Government is well aware. The Buriats, with their bandit allies, now considering us unwilling to espouse their cause, contemplate despatching troops to violate our frontiers and compel our submission. Furthermore, forces from the so-called White Army have forcibly occupied Tannu Urianghai, an old possession of Outer Mongolia, and attacked both Chinese and Mongolian troops, this being followed by the entry of the Red Army, thus making the situation impossible.

Now that our internal and external affairs have reached such a climax, we, the Members of the Government, in view of the present situation, have assembled all the princes, dukes, lamas and others and have held frequent meetings to discuss the question of our future welfare. Those present have been unanimously of the opinion that the old bonds of friendship having been restored, our autonomy should be cancelled, since Chinese and Mongolians are filled with a common purpose and ideal.

"The result of our decision has been duly reported to His Holiness the Bogdo Jeptsun Damba Hut'ukht'u Khan and has received his approval and support. Such being the position we now unanimously petition His Excellency the President that the old order of affairs be restored.

(Signed) Premier and Acting Minister of the Interior, Prince Lama Batma Torgee;
Vice-Minister, Prince of Tarkhan Puntzuk Cheilin;
Vice-Minister, Great Lama of Eeliktu, Prince Puntzuk Torgee;
Minister of Foreign Affairs, Duke Cheilin Torgee;
Vice-Minister, Dalai Prince Cheitantun Lomour;
Vice-Minister, Prince of Ochi, Kaotzuktanba;
Minister of War, Prince of Elteni Jamuyen Torgee;
Vice-Minister, Prince of Elteni Selunto Chihleh;
Vice-Minister, Prince of Elteni Puntzuk Laptan;
Vice-Minister, Prince of Itkemur Chitu Wachir;
Minister of Finance, Lama Prince Loobitsan Paletan;
Vice-Minister, Prince Torgee Cheilin;
Vice-Minister, Prince of Suchuketu Tehmutzu Kejwan;
Minister of Justice, Dalai of Chiechenkhan Wananin;
Vice-Minister, Prince of Daichinchihlun Chackehbateherhu;
Vice-Minister, Prince of Choliketu Lama Dashtunyupu."

The above was received in Peking on November 17, 1919, and five days later a Presidential Mandate was promulgated granting the request. On November 23 Reuter's agency issued a lengthy statement on the subject from the Chinese Ministry of Foreign Affairs justifying the action of the Republic in accepting such cancellation of independence. It concluded with the following pregnant passage:—"The Government of China, in complying with this earnest appeal to restore the old order of affairs, is moved by the heartfelt desire to assist in the establishment of general peace on an enduring basis. It was impossible to continue arrangements which had obviously lapsed owing to the dissolution of the Russian Empire and which were a constant invitation to unrest. The policy now being carried out is in strict agreement with the frontier principles established by the late dynasty: for China sixty years ago anticipated the ruling of the recent Paris Peace Conference that a fundamental necessity exists to give all nations access to the sea—her cession of the left bank of the Amur, together with the right of navigation on that great waterway, coupled with frontier trade privileges, having conferred on the Russian people all that they could legitimately claim beyond Lake Baikal. To-day, as in the case of Persia, where an arrangement which had been made by the late Russian Government has likewise automatically terminated, and been replaced by a new Treaty freely entered into and more in consonance with existing circumstances, the frank appeal of the Urga Government to the Republic of the Five Races marks a new

stage in world reorganization. It is now not too much to hope that in the not distant future general peace and tranquility will reign throughout every district of the Chinese domain, and promote all those high objects of civilization which are to-day so constantly in the thoughts and declarations of statesmen and peoples alike."

The cancellation of Mongolian independence being thus an accomplished fact, measures are already being devised to reform and develop that rich country. For example, the Mongolian-Tibetan School in Peking is being reorganized; the establishment of schools and other educational institutions in the various Ho-shuns in Mongolia is being encouraged; and a Mongol vernacular paper will soon be published. Besides, waste lands will be reclaimed and railways will be built, etc. And, as regards the foreign debt of the Autonomous Mongolian Government which amounts to five million roubles, the same will be repaid by the Peking Government in one instalment so as to recover promptly the rights and privileges secured to foreigners thereon.

Agreement Between Russia and Mongolia.

(Signed at Urga, October 21/November 3, 1912).

In accordance with the desire unanimously expressed by the Mongolians to maintain the national and historic constitution of their country, the Chinese troops and authorities were obliged to evacuate Mongolian territory, and Djebzoun Damba-Hut'ukht'u was proclaimed Ruler of the Mongolian people. The old relations between Mongolia and China thus came to an end.

At the present moment, taking into consideration the facts stated above, as well as the mutual friendship which has always existed between the Russian and Mongolian nations, and in view of the necessity of defining exactly the system regulating trade between Russia and Mongolia;

The Actual State Councillor Ivan Korostovetz, duly authorized for the purpose by the Imperial Russian Government; and

The Protector of the Ten Thousand Doctrines Sain-noin Khan Namnan-Souroun, President of the Council of Ministers of Mongolia;

The Plenipotentiary Tchin-souzouktou Tzin-van Lama Tzerin-Tchimet, Minister of the Interior;

The Plenipotentiary Daitzin-van Handa-dorki, of the rank of Khan-erdeni, Minister for Foreign Affairs;

The Plenipotentiary Daitzin-van Handa-dorki, of the rank of Khan-erdeni, Minister for Foreign Affairs;

The Plenipotentiary Erdeni Dalai Tzun-van Gombo-Souroun, Minister of War;

The Plenipotentiary Touchetou Tzun-van Tchakdorjab, Minister of Finance;

The Plenipotentiary Erdeni Tzum-van Namsarai, Minister of Justice;

Duly authorized by the Ruler of the Mongolian nation, by the Mongolian Government and by the ruling Princes, have agreed as follows :—

Article I.

The Imperial Russian Government shall assist Mongolia to maintain the autonomous régime which she has established, as also the right to have her national army, and to admit neither the presence of Chinese troops on her territory nor the colonization of her land by the Chinese.

Article II.

The Ruler of Mongolia and the Mongolian Government shall grant, as in the past, to Russian subjects and trade the enjoyment in their possession of the rights and privileges enumerated in the protocol annexed hereto.

It is well understood that there shall not be granted to other foreign subjects in Mongolia rights not enjoyed there by Russian subjects.

Article III.

If the Mongolian Government finds it necessary to conclude a separate treaty with China or another foreign Power, the new treaty shall in no case either infringe the clauses of the present agreement and of the protocol annexed hereto, or modify them without the consent of the Imperial Russian Government.

Article IV.

The present amicable agreement shall come into force from the date of its signature.

In witness whereof the respective plenipotentiaries, having compared the two texts, Russian and Mongolian, of the present agreement, made in duplicate, and having found the two texts to correspond, have signed them, have affixed thereto their seals, and have exchanged texts.

Done at Urga on the 21st October, 1912, corresponding to the 24th day of the last autumn month of the 2nd year of the reign of the Unanimously Proclaimed, according to the Mongolian calendar.

Protocol Annexed to above Agreement.

By virtue of the enactment of the second article of the agreement, signed on this day between Actual State Councillor, Ivan Korostovetz, Plenipotentiary of the Imperial Russian Government, and the President of the Council of Ministers of Mongolia (names and titles as above)—the above-named plenipotentiaries have come to an agreement respecting the following articles, in which are set forth the rights and privileges of Russian subjects in Mongolia, some of which they already enjoy, and the rights and privileges of Mongolian subjects in Russia :

Article I.

Russian subjects, as formerly, shall enjoy the right to reside and move freely from one place to another throughout Mongolia; to engage there in any kind of commercial, industrial and other business; and to enter into agreements of various kinds, whether with individuals, or firms, or institutions, official or private, Russian, Mongolian, Chinese, or foreign.

Article II.

Russian subjects, as formerly, shall enjoy the right at all times to import and export, without payment of import and export dues, every kind of product of the soil and industry of Russia, Mongolia and China, and other countries, and to trade freely in it without payment of any dues, taxes, or other dues.

The enactment of this (2nd) article shall not extend to combined Russo-Chinese undertakings, or to Russian subjects falsely declaring themselves to be owners of wares not their property.

Article III.

Russian credit institutions shall have the right to open branches in Mongolia, and to transact all kinds of financial and other business, whether with individuals, institutions, or companies.

Article IV.

Russian subjects may conclude purchases and sales in cash or by an exchange of wares (barter), and they may conclude agreements on credit. Neither "Ho-shuns" nor the Mongolian Treasury shall be held responsible for the debts of private individuals.

Article V.

The Mongolian authorities shall not preclude Mongolians or Chinese from completing any kind of commercial agreement with Russian subjects, from entering into their personal service, or into commercial and industrial undertakings formed by them. No rights of monopoly as regards commerce or industry shall be granted to any official or private companies, institutions, or individuals in Mongolia. It is, of course, understood that companies and individuals who have already received such monopolies from the Mongolian Government previous to the conclusion of this agreement shall retain their rights and privileges until the expiry of the period fixed.

Article VI.

Russian subjects shall be everywhere granted the right, whether in towns or "Ho-shuns," to hold allotments on lease, or to acquire them as their own property for the purpose of organizing commercial, industrial establishments, and also for the purpose of constructing houses, shops, and stores. In addition, Russian subjects shall have the right to lease vacant lands for cultivation. It, is of course, understood that these allotments shall be obtained and leased for the above-specified purposes, and not for speculative aims. These allotments shall be assigned by agreement with the Mongolian Government in accordance with existing laws of Mongolia, everywhere excepting in sacred places and pasture lands.

Article VII.

Russian subjects shall be empowered to enter into agreement with the Mongolian Government respecting the working of minerals and timber, fisheries, etc.

Article VIII.

The Russian Government shall have the right, in agreement with the Government of Mongolia, to appoint consuls in those parts of Mongolia it shall deem necessary.

Similarly, the Mongolian Government shall be empowered to have Government agents at those frontier parts of the empire where, by mutual agreement, it shall be found necessary.

Article IX.

At points where there are Russian consulates, as also in other localities of importance for Russian trade, there shall be allotted, by mutual agreement between Russian consuls and the Mongolian Government, special "factories" for various branches of industry and the residence of Russian subjects. These "factories" shall be under the exclusive control of the above-mentioned consuls, or the heads of the Russian commercial companies if there be no Russian consul.

Article X.

Russian subjects, in agreement with the Mongolian Government, shall retain the right to institute, at their own cost, a postal service for the despatch of letters and the transit of wares between various localities in Mongolia and also between specified localities and points on the Russian frontier. In the event of the construction of "stages" and other necessary buildings, the regulations set forth in Article VI of this protocol must be duly observed.

Article XI.

Russian consuls in Mongolia, in case of need, shall avail themselves of Mongolian Government postal establishments and messengers for the despatch of official correspondence, and for other official requirements, provided that the gratuitous requisition for this purpose shall not exceed one hundred horses and thirty camels per month. On every occasion, a courier's passport must be obtained from the Government of Mongolia. When travelling, Russian consuls, and Russian officials in general, shall avail themselves of the same establishments upon payment. The right to avail themselves of Mongolian Government "stages" shall be extended to private individuals, who are Russian subjects, upon payment for the use of such "stages" of amounts which shall be determined in agreement with the Mongolian Government.

Article XII.

Russian subjects shall be granted the right to sail their own merchant vessels on, and to trade with the inhabitants along the banks of, those rivers and their tributaries which, running first through Mongolia, subsequently enter Russian territory. The Russian Government shall afford the Government of Mongolia assistance in the improvement of navigation on these rivers, the establishments of the necessary beacons, etc. The Mongolian Government authorities shall assign on these rivers places for the berthing of vessels, for the construction of wharves and warehouses, for the preparation of fuel, etc., being guided on these occasions by the enactments of Article VI of the present protocol.

Article XIII.

Russian subjects shall have the right to avail themselves of all land and water routes for the carriage of wares and the droving of cattle, and, upon agreement with the Mongolian authorities, they may construct, at their own cost, bridges, ferries, etc., with the right to exact a special due from persons crossing over.

Article XIV.

Travelling cattle, the property of Russian subjects, may stop for the purpose of resting and feeding. In the event of prolonged halts being necessary, the local authorities shall assign proper pasturage areas along travelling cattle routes, and at cattle markets. Fees shall be exacted for the use of these pasturing areas for periods exceeding three months.

Article XV.

The established usage of the Russian frontier population harvesting (hay), as also hunting and fishing, across the Mongolian borders shall remain in force in the future without any alteration.

Article XVI.

Agreements between Russian subjects and institutions on the one side and Mongolians and Chinese on the other be concluded verbally or in writing, and the contracting parties may present the agreement concluded to the local government authorities for certification. Should the latter see any objection to certifying the contract, they must immediately notify the fact to a Russian consul, and the misunderstanding which has arisen shall be settled in agreement with him.

It is hereby laid down that contracts respecting real estate must be in written form, and presented for certification and confirmation to the proper Mongolian Government authorities and a Russian consul. Documents bestowing rights to exploit natural resources require the confirmation of the Government of Mongolia.

In the event of disputes arising over agreements concluded verbally or in writing, the parties may settle the matter amicably with the assistance of arbitrators selected by each party. Should no settlement be reached by this method, the matter shall be decided by a mixed legal commission.

There shall be both permanent and temporary mixed legal commissions. Permanent commissions shall be instituted at the places of residence of Russian consuls, and shall consist of the consul, or his representative, and a delegate of the Mongolian authorities of corresponding rank. Temporary commissions shall be instituted at places other than those already specified, as cases arise, and shall consist of representatives of a Russian consul and the prince of that "Ho-shun" to which the defendant belongs or in which he resides. Mixed commissions shall be empowered to call in as experts persons with a knowledge of the case from among Russian subjects, Mongolians, and Chinese. The decisions of the mixed legal commissions shall be put into execution without delay, in the case of Russian subjects through a Russian consul, and in the case of Mongolians and Chinese through the prince of the "Ho-shun" to which the defendant belongs or in which he is resident.

Article XVII.

The present protocol shall come into force from the date of its signature.

In witness whereof, the respective plenipotentiaries, finding, upon comparison of the two parallel texts of the present protocol—Russian and Mongol—drawn up in duplicate, that the texts correspond, have signed each of them, affixed their seals, and exchanged texts.

Executed at Urga, the 21st October, 1912 (o.s.), and by the Mongolian calendar, on the 24th day of the last autumn moon, in the second year of the administration of the Unanimously Proclaimed.

(In the original follow the signature of M. Korostovetz, Minister Plenipotentiary; and in the Mongol language the signatures of the President of the Mongolian Council of Ministers, and the Plenipotentiaries the Ministers of the Interior, Foreign Affairs, War, Finance, and of Justice).

Declaration and Exchange of Notes by Russia and China.

(Signed at Peking, October 23/November 5, 1913).

The Imperial Government of Russia having formulated the principles which it took as the basis of its relations with China as regards Outer Mongolia, and the Government of the Chinese Republic having stated its approval of the said principles, the two governments have agreed upon the following:—

Article I.

Russia recognizes that Outer Mongolia is under the suzerainty of China.

Article II.

China recognizes the autonomy of Outer Mongolia.

Article III.

Recognizing the exclusive right of the Mongols of Outer Mongolia to provide for the internal administration of Autonomous Mongolia and to settle all questions of a commercial and industrial nature relating to this country, China binds itself not to intervene in these matters and consequently will not send troops to Outer Mongolia, nor will it keep any civil or military officials there, and it will abstain from colonizing in this country. It is, however, understood that a Dignitary sent by the Chinese Government may reside at Urga, accompanied by the necessary subordinates and an escort. Moreover, the Chinese Government may, in case of need, keep in certain localities in Outer Mongolia, to be determined in the course of the conferences provided for in Article V of the present agreement, agents for the protection of the interests of its subjects. Russia, on its side, binds itself not to keep troops in Outer Mongolia, with the exception of consular guards, and not to intervene in any branch of the administration of this country and to abstain from colonizing.

Article IV.

China declares itself ready to accept the good offices of Russia for the establishment of its relations with Outer Mongolia, in conformity with the principles above set forth and with the stipulations of the Russo-Mongolian Commercial Protocol of October 21, 1912 (November 3, 1912).

Article V.

Questions pertaining to the interests of Russia and of China in Outer Mongolia and resulting from the new state of affairs in this country will be the subject of subsequent conferences.

In faith whereof the undersigned, duly authorized to this effect, have signed the present Declaration and have affixed their seals thereto.

Done at Peking, in duplicate, October 23/November 5, nineteen hundred and thirteen, corresponding to the fifth day of the eleventh month of the second year of the Chinese Republic.

Sun Pao-ch'i (Minister of Foreign Affairs).
B. Krupensky (Russian Minister).

Note of the Russian Minister at Peking to the Chinese Minister for Foreign Affairs.

In signing the Declaration under date of this day relating to Outer Mongolia, the undersigned, Envoy Extraordinary and Minister Plenipotentiary of His Majesty the Emperor of all the Russias, duly authorized to this effect, has the honor to declare, in the name of his government, to His Excellency Mr. Sun Pao-ch'i, Minister of Foreign Affairs of the Chinese Republic, the following:—

1.—Russia recognizes that the territory of Outer Mongolia is a part of the territory of China.

2.—As regards questions of a political and territorial nature, the Chinese Government shall come to an agreement with the Russian Government through negotiations in which the authorities of Outer Mongolia shall take part.

3.—The conferences provided for in Article V of the Declaration shall take place between the three interested parties, who shall designate for this purpose a place where their delegates shall meet.

4.—Outer Mongolia shall comprise the regions which have been under the jurisdiction of the Chinese Amban of Urga, of the Tartar-General of Uliassutai, and of the Chinese Amban of Kobdo. Inasmuch as there are no detailed maps of Mongolia and as the boundaries of the administrative divisions of this country are uncertain, it is agreed that the exact boundaries of Outer Mongolia, as well as the boundary between the district of Kobdo and the district of Altai, shall be the subject of the subsequent conferences provided for in Article V of the Declaration.

The undersigned takes advantage of this opportunity to repeat to His Excellency Mr. Sun Pao-ch'i the assurances of his very high consideration.

(Sgd.) B. Krupensky.

Note of the Chinese Minister for Foreign Affairs to the Russian Minister at Peking.

In signing the Declaration under date of this day relating to Outer Mongolia, the undersigned, Minister of Foreign Affairs of the Chinese Republic, duly authorized to this effect, has the honor to declare, in the name of his government, to His Excellency Mr. Krupensky, Envoy Extraordinary and Minister Plenipotentiary of His Majesty the Emperor of all the Russias, the following:—

1.—Russia recognizes that the territory of Outer Mongolia is a part of the territory of China.

2.—As regards questions of a political and territorial nature, the Chinese Government shall come to an agreement with the Russian Government through negotiations in which the authorities of Outer Mongolia shall take part.

3.—The conferences provided for in Article V of the Declaration shall take place between the three interested parties, who shall designate for this purpose a place where their delegates shall meet.

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The undersigned takes advantage of this opportunity to repeat to His Excellency Mr. Krupensky the assurance of his very high consideration.

(Sgd.) Sun Pao-chi.

Russo-Mongolian Railway Agreement.

(Signed at Kiachta, September 30, 1914).

Article I.

The Russian Government hereby recognizes the permanent right of the Mongolian Government to build railways within the boundaries of its own territory.

Article II.

The Russian and Mongolian Governments shall consult each other to decide the railway lines and procedure of their building, which should be carried out in such a way as to benefit both parties concerned.

Article III.

In case of railway building, whether financed by the Russian or Mongolian Government or by private persons, the Russian Government shall render adequate help to the Mongolian Government.

Article IV.

When such railways as will connect with the railways on Russian frontiers are to be built, the Russian and Mongolian Governments shall consult each other on the terms concerning the privileges, localities and railway revenue regarding the same.

Article V.

Whereas the Mongolian Government has the right to build railways within the boundaries of its own territory, if it can raise funds internally to build paying railways, the Russian Government shall not interfere with it. But should the Mongolian Government concede such rights to other countries, the Mongolian Government, for the sake of friendly relations with Russia, should discuss this matter with the Russian Government, before the former makes the actual concession, in order to ascertain whether the projected lines of railway would jeopardize the Russian interest from an economic or military standpoint.

Article VI.

This treaty shall be duplicated in both the Mongolian and Russian languages. One copy shall be deposited in the office of the Russian Consul-General in Mongolia and the other in the office of the Ministry of Foreign Affairs of the Mongolian Government.

Agreement Between China, Russia, and Mongolia.

This agreement was signed on May 25/June 7, 1915, at Kiachta, and was published in the FAR EASTERN REVIEW, of June, 1915.

Canton City Wall Replaced by Road

A little over a year ago the Canton Municipal authorities began work upon the improvement of the city by tackling the demolition of the city wall. Mr. H. L. Wu, C.E., was in charge and began operations upon the western section of the old wall, built about 800 years ago. This was demolished and the work on the remainder of the wall was let out from time to time to different contractors by open tender. Most of the wall is by this time torn down, and in a few more months it should be entirely replaced by a well-made modern road. By the end of June last two miles of the wall had already made way for a macadamised road, and since then more has been added.

The entire length of the wall, including the old section, built some 800 years ago, and the so-called new city wall, built some 500 years ago, is about six miles. The average height of the former is 24 feet, with a width of 43 feet at the bottom and 35 feet at the top; while the latter is about 15 feet high, and 17 feet wide at the bottom and 13 feet at the top. The total earthwork, which had to be disposed of was some 792,700 cubic yards, and it has been shifted from the site mostly on small boats plying on the numerous small waterways about the city. With the exception of the new city wall section all the useful material such as bricks and stones removed from the wall were returned to the Municipality by the various contractors.

A difficulty which faced the engineers when they came to arrange for the demolition of the wall and construct a roadway in its place was the great difference in levels of the land within and without the wall. On one side houses were found to be two or three feet below the street level while on the opposite side of the same road they were four or five feet above the street. In many places in the north-western section the ground level inside the city wall is as much as from 15 to 22 feet above that on the outside. This necessitated the demolition of the wall to a general level of the inside ground and the provision of steps at intervals to communicate with the lower levels on the outside.

When it was decided to replace the wall with a modern roadway the Municipal authorities determined to make the road a wide one at once, and despite the existence of houses fixed the measurement at from 80 to 100 feet. This meant that more than 3,500 houses had to be condemned. As a tramway system may eventually be installed all the street corners were designed with at least 50 feet radii, while existing bridges and T culverts had to be replaced by structures of new design to carry the expected heavier traffic.

The cost of the work per linear foot, including transportation, excavation, and some retaining walls, varies. On the old wall it ranged from $7.45 to $22, and on the so-called new city wall from $2.25 to $4.45. The total cost of the entire work is estimated to be $350,735. It is interesting to point out that despite deplorable existing conditions the authorities were able to carry out the improvement without danger of forcible public opposition because it was early discovered that with the improvements land values rose by leaps and bounds, and lots of Government land hitherto almost valueless have been sold for more than half a million dollars.

Oil-Hardening a Water-Hardening Steel

Users of tool steel in the Colonies or in far distant countries often find themselves up against steel problems which must be solved at once somehow or other, as time will not allow of the necessary information being obtained from the maker of the steel. Such problems are often tackled in extremely ingenious ways, and the difficulties overcome.

Recently a visitor to the Imperial Steel Works home on leave from an engineering works in China, explained how, during the War, he overcame various difficulties; but he was still dissatisfied with the way he had had to tackle one of them.

The problem in question was how to make and harden successfully a small circular cutter about 4-in. diameter and $\frac{3}{16}$-in. thick, with a bevelled edge. He had been making these by parting off a disc of the necessary thickness from a 4-in. diameter steel bar, and hardening the finished cutter in water. He complained that he was only able to harden about 1 in 4 cutters without their cracking, or proving defective in other ways, which is not surprising.

The disadvantage of operating at a great distance from the source of supply, and perhaps with native labor, is that workshop tradition is absent. The best rule-of-thumb experience cannot provide for every difficulty; and successful tool-making demands skilled and experienced workers wherever practised. The wonder is, not that troubles occur, but that the Briton in exile so often manages to overcome them. Had our informant been working in England, he would probably not have attempted to make these cutters at all; they are not a job for the all-round tool-maker. The revised edition of the Edgar Allen Catalogue "G" contains directions for treating all Edgar Allen Steels: but it provides, of course, for ordinary work, not for exceptional emergency. Instructions for treating tool-steels are framed to suit the kind of use for which the steel is in practically all instances required. Out-of-the-way tools require some modification of the routine treatment.

In this case, if the cutter had been hardened in oil instead of water, it is quite possible that the cracking would not have occurred. It is not known to all workers that a water-hardening steel may be successfully hardened in oil when the tool made from it is in a very thin section, such as the cutter just mentioned. Of course, a tool of any usual type made from water-hardening steel could be successfully hardened in water only. In the case of this cutter, again, successful hardening would be obtained more readily by cutting the discs from a suitable sheet of steel instead of turning them off from a round bar. Even when the cracking difficulty has been overcome there remains the liability of the cutter to warp in the hardening process. One way of overcoming this would be to make a suitable cramp in which to hold the cutter flat while it was being quenched. Probably, however, the most satisfactory and economical thing to do, when circumstances permit it, would be to order the finished cutters direct from people (such as an experienced firm of steel makers who also make Circular Saws) who are in the habit of tackling similar jobs.—"The Edgar Allen News."

Modernization of Philippine Public Utilities

The Result of Two Decades of American Engineering Tutelage in the Islands

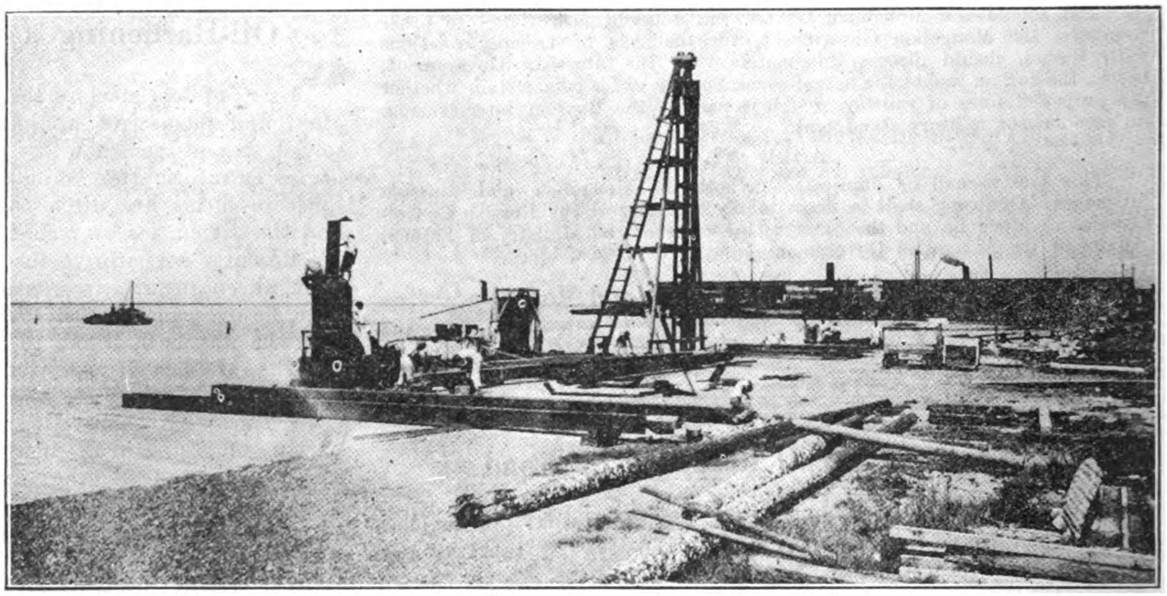
By Frank J. Dolan

THE Insular Government of the Philippine Islands has been confronted for the past twenty years with one of the most difficult problems in the reconstruction of public utilities that has ever presented itself in any country.

At the beginning of the American occupation the Islands were almost totally devoid of any public service outside the city of Manila, and it must be confessed that Manila itself had little or nothing to boast of. In the year 1900 there was no rail transportation; street car systems had not been thought of; waterworks, artesian wells and sewerage systems were never even considered in the provinces; the only roads were old Spanish highways and a few built by the United States Army, and these were for the most part blazed trails through the hills; some semblance of education was carried on in three old adobe buildings by Spanish missionaries, two of which were in Manila and one in Cebu; telephone and telegraph systems were not even a proposed addition to the lines of communication already established (a spasmodic mail service operated by the constabulary), and the inter-island boats were very few and far between.

This brief résume conveys some small idea of the huge task set for those destined to place the Philippine Islands on a firm commercial foundation, and the following review of the public utilities will testify to the enormous growth and expansion of the various systems of public service since the early days of the American occupation.

The Philippine Island Telephone and Telegraph Company operates in Manila the most modern and efficient telephone system in the Orient. At the end of the year 1918 the Company had 75,000,000 feet of copper wire in underground cable; 4,500,000 feet of open wire on poles, and 13,000,000 feet of copper wire in aerial cable.

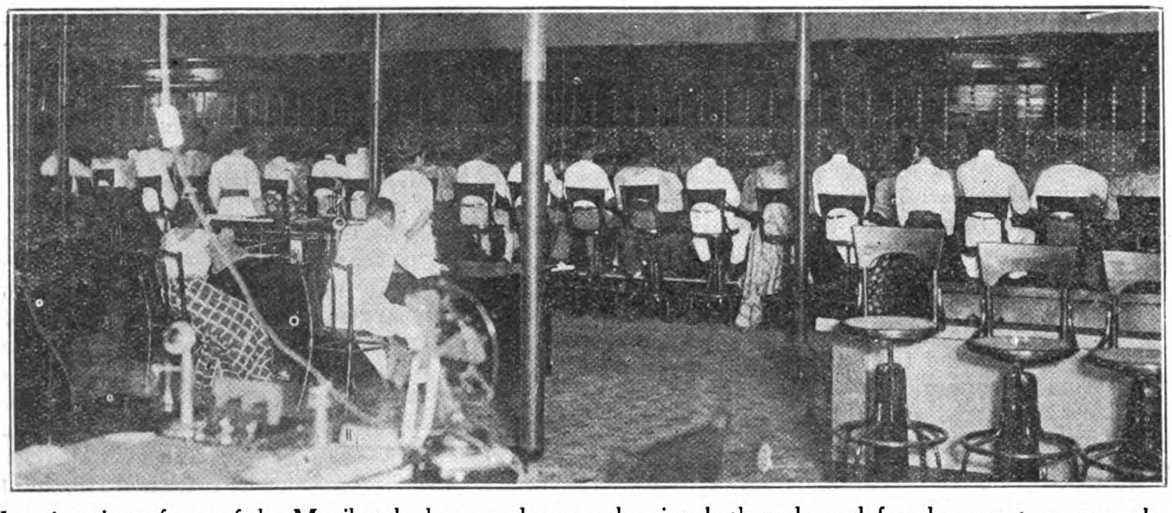


Erection of derrick commenced on the site of Manila's new pier. Pier No. 5 may be seen in the background

Now 8,300 telephones are connected in Manila and the suburban towns, as against 750 in 1906, the year of the present company's organization.

In the cities of Cebu and Illoilo, the two trade centres of the Southern Islands, the old magnetic ringing system was inaugurated a few years ago and is still being used. There are approximately 300 telephones in Cebu and 200 in Illoilo, and in Baguio, in the mountain province, about 75 of the old type are employed. From Manila to Cavite is the longest direct call stretch, a distance of 25 miles.

The Telephone Company's equipment includes two common battery exchanges of the latest type, similar to those now being used in the United States, and two automatic exchanges of the latest approved type. An automatic system is being installed in Manila.



Interior view of one of the Manila telephone exchanges, showing both male and female operators at work at the switchboard. One of the most essential qualifications for a position as telephone operator is a knowledge of Spanish, English and Tagalog

Telegraphs

The Philippine Insular Government took over the telegraph system in 1906,

which had, up to this time been operated by the Philippine Constabulary and the Signal Corps of the United States army since 1900. In 1906 only 198 miles of cable had been laid and 2,574 miles of telegraph wire strung, but a survey of the present telegraph situation shows a growth that is typical of all the other public utilities.

The Philippines are now wound around with 11,000 miles of overhead wire, and over 2,000 miles of submarine cable. More than 350 telegraph stations are in operation throughout the Islands, and 40 more will be added to this number in 1920. Most of the principal municipalities can now be reached by telegraph.

In addition to the regular telegraph system, ten wireless stations are in daily use, and fifteen more are authorized. The largest of these is operated in Zamboanga, on the Island of Mindanao, and is capable of communicating with Java and Borneo.

Irrigation

The Irrigation Department of the Bureau of Public Works was created in 1908, and a bill was passed authorizing the annual expenditure of P.750,000 indefinitely. The Division did excellent work, but was abandoned in 1913, due to the necessity for economizing in the expenditures for Public Works.

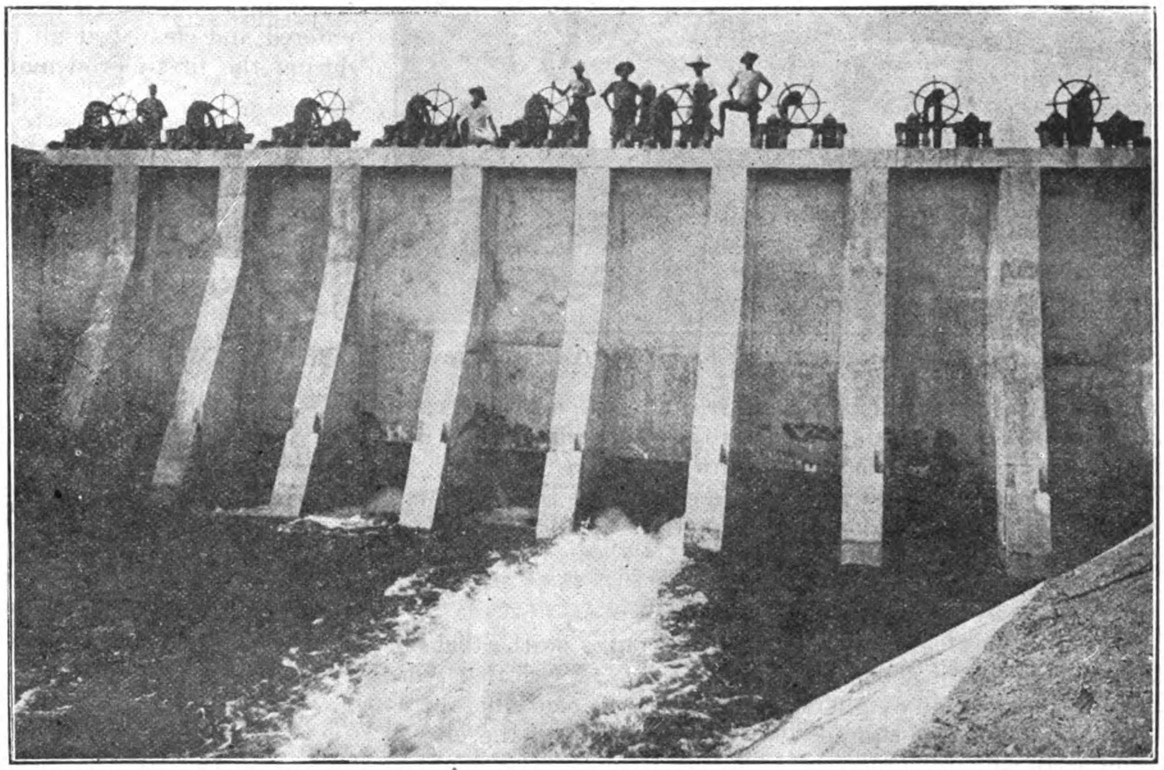
The department was revived again early in 1918 with an appropriation of P.1,000,000 for the fiscal year. Notwithstanding the fact that this appropriation was cut in half by the legislature in 1919, excellent results have been attained. There are now 25,000 hectares in the Islands properly irrigated, and ten projects recently approved for construction will irrigate an area of 22,000 hectares.

Most of these systems should be completed during the coming year, and will practically double the area now being served by modern irrigation systems. In addition to the systems approved for construction, the Bureau of Public Works has under consideration 40 irrigation projects in 20 of the principal rice producing provinces that will irrigate a total area of about 3,000,000 hectares, and cost about P.50,000,000.

A proposed act is now pending that would make for the clearing up of these projects within a period of ten years. Their construction would increase the annual yield of rice from 6,000 to 10,000 cavans, which would be a solution of the present rice shortage.

Water Systems

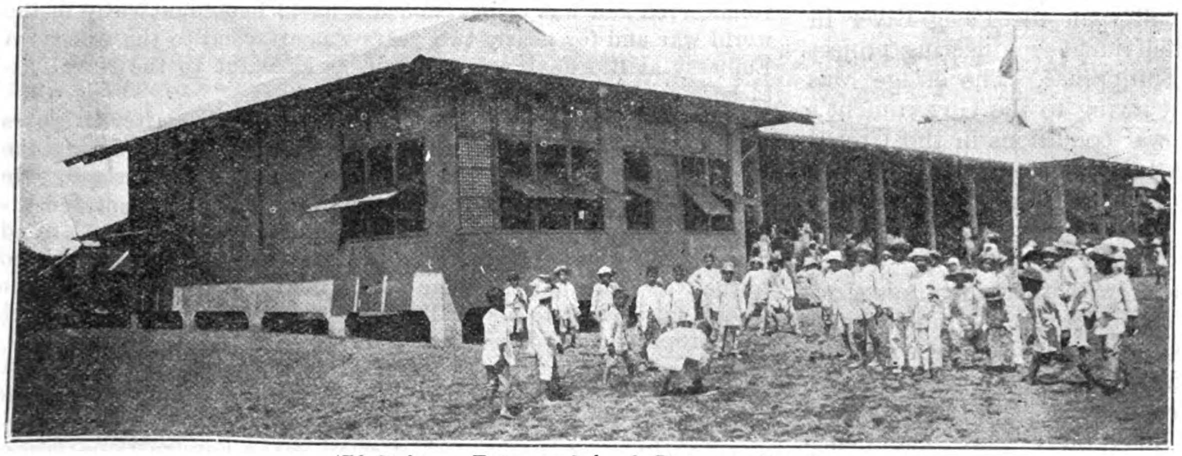
The Bureau of Public Works is carrying on an active program for the construction of municipal waterworks. The Bureau has supplied most of the villages with artesian wells, but the demands for water supply systems are increasing, and as a result of these demands forty systems are now under construction and twenty more have been approved. At present there are only twelve completed systems in the Philippines, but it is estimated that at the end of 1920 over fifty water supply systems will be in operation.



Irrigation in Tarlac Province. View of headworks in operation, looking into headworks from canal; gates passing 2.5 second meters.

Railroads

Three railroads, owned and operated by the Government, have a total span of 1225.50 kilometres of rail, 1013.50 of which is laid on the Island of Luzon, 116.50 in Panay, and 95.50 in Cebu.



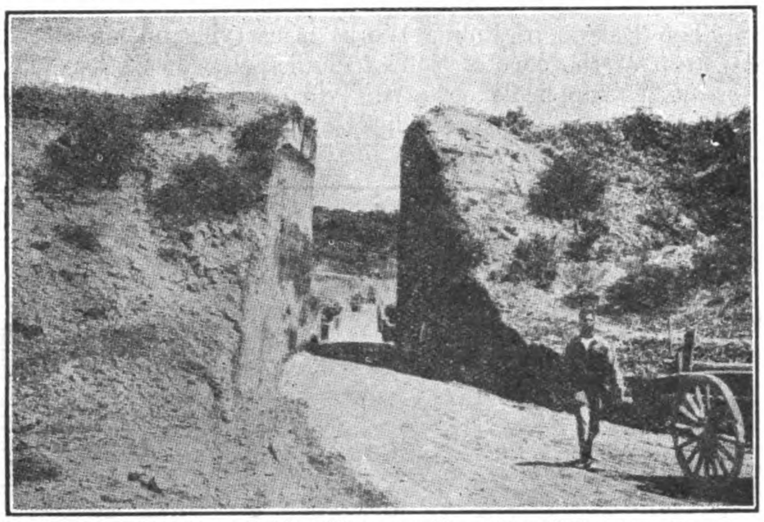
470-Balayan Primary School, Batangas Province

Highways and Street Railways

On June 30, 1919, the Highway Commission reported that 9,526 kilometres of modern highways had been completed in the provinces, and 221 kilometers of city streets in Manila.

This is the sum total of all the improved or semi-improved roads and streets in the Philippine Islands, and this figure is shared by three separate and distinct classes of

highways. First class roads are well graded and surfaced, thoroughly drained and constantly maintained. The term "second class roads" is applicable to fairly graded, partially or naturally surfaced highways, and are generally intermittantly maintained. Bridges and culverts are usually complete, but, in part, are temporary structures. All traffic routes for carts not included in the first and second class, are third class roads. Such roads are usually narrow and poorly graded, and are generally impassable in the rainy season.


South approach Sabang Bridge, Batangas-Ibaan Road, Batangas Province

The length of road in the different classes is as follows: first class, 4,328.3 kilometers; second class, 2,034.1 kilometers; third class, 3,163.7 kilometers.

Street Railway

The trolley car system of Manila ranks with that of American cities of about the same size as New Orleans. One hundred and twenty-eight street cars are in constant operation, most of them equipped with airbrakes, and the city is interlaced with fifty-five miles of single track.

The Manila Electric Company, owners and operators of the street car system, have installed huge dynamos in the power plant, capable of generating 3,500,000 kilowatt hours a month. These dynamos furnish light for about 289,000 people in and around Manila.

School Buildings

There are now fifty high schools and four hundred and four common school buildings in the Philippine Islands, with a total of twenty-three hundred and fifty-six class rooms. Most of the buildings are modern structures and are equipped according to the educational standards of the United States

Public Works under Construction

The Jones Bridge, which will span the Pasig River in Manila, is probably the largest individual engineering project now under construction in the Philippines. The bridge was started in the spring of 1917, but owing to the Government's inability to procure steel due to war conditions in the United States, operations were suspended after a few months. But for several months work on its structure has been rapidly progressing, and it is expected to be opened to traffic on July first, 1921, with a final cost of P.1,925,300.

At present, Manila is provided with three medium sized piers, one of which is used exclusively by the United States Army. A fourth pier, approximately 240-ft. in width by 1,000-ft. in length, is now under construction and will be completed during the next year. A fifth pier is also under consideration, and construction operations may commence early in the spring of 1920. More than 1,000 lineal feet of marginal wharf has been constructed, together with numerous marginal cargo sheds. The length of this wharf will likely be trebled during the coming year.

Fuel Oil Tanks

Permission to erect fuel oil storage tanks upon the port area at Manila has been granted, and each pier will be piped so that ships burning oil may receive fuel within a very short time after tying up.

Interisland Shipping

The improvement of interisland trade during the years of the American occupation can best be illustrated by the following table, which contains a list of the interisland ships entered and cleared at all the ports of the Philippine Islands during the first eleven months of 1919:—

	Entered		Cleared	
	Vessels	Net Tonnage	Vessels	Net Tonnage
Illoilo	4,868	335,260	4,899	338,426
Cebu	4,923	334,169	5,053	345,272
Jolo	111	28,666	111	28,666
Zamboanga ...	997	131,763	1,008	135,123
Balabac	33	2,030	35	2,046
Manila	3,026	532,547	3,135	532,707

Unlike other countries, where public utility and public service systems have been in operation for generations and where all the ultra-modern facilities for the improvement of these systems are immediately available, the Public Utilities of the Philippines are but twenty "years young"—six thousand miles from its base of supplies.

Notwithstanding this the Filipino people have joined in the march of progress and are firm in their desire and confident in their ability to continue to improve the public utilities of the Philippine Islands and to place them in a firm position on the same plane as corresponding systems in any country in the world.

Irving National Bank, New York

Some measure of the recent expansion of the foreign business of the Irving National Bank is afforded by the appointment by the Board of Directors of two vice-presidents, an assistant cashier and four assistant managers all for service in the enlarged Foreign Department. Mr. William N. Enstrom and Mr. George D. Graves are the new vice-presidents and Mr. Northrop Holbrook the assistant cashier, while the added assistant managers are Messrs. Robert W. Kuebl, James C. Bradshaw, George Helfrich and Fritz Hartman.

All of the new officers have been Irving men for some time and their promotions have been earned. Mr. Enstrom, who was born in New York in 1886, entered the Irving's employ soon after finishing high school and except for leave of absence during the war has served continuously in the Foreign Department. He volunteered and was commissioned a naval lieutenant early in the world war and for nearly two years was attached to the American Embassy at Rio de Janeiro, Brazil, as assistant to the Naval Attaché.

Mr. Graves returned to New York in September after six years spent in Porto Rico, first as a resident director and during the last two years as the Irving's representative in the island. He was born in Canada of American parentage, and except for his primary schooling all his education was received in the United States. He was graduated from Yale in 1899, and was admitted to the New York bar the same year. In this ten years of practice in this city, prior to his settling in Porto Rico, he traveled much in Europe and the West Indies in the interest of clients. Mr. Graves will give particular attention to the development of relations with the Irving's Latin American correspondents and customers.

Mr. Holbrook has been chief clerk of the Foreign Department and the other new officers have also been connected with the Department for several years.

Japan's Burden and China's Opportunity

By George Bronson Rea

"There exist weighty reasons which draw the United States closely to Japan in bonds of mutual protection. The Russian menace is a very live and real one, intensified tenfold by the certainty of its recrudescence under German direction, placing Japan in a most delicate position holding the eastern front for civilization in the depths of Asia. Every sentiment of loyalty, gratitude, wisdom and friendship calls upon us to stand by her, to aid her with moral and material support, for on her shoulders alone will fall the burden of resisting the flood from the west. If the Kolchak government fails, if the thin line of resistance gives way west of the Urals and the red wave of Bolshevism sweeps onward into China who will be called upon to save Asia from ruin? And let us remember that the Bolshevists are marching eastward, crying "On to China." While we sleep in peace and comparative comfort in the United States safe from the horrors of these old world upheavals, the Japanese are forced to preserve intact their line of defense to oppose the onward march of their natural enemies, and at the same time cope with the secret opposition of a one-sided diplomacy. Put an end to it. Let us wake before it is too late."

The above situation, forecasted in September in "The Breakdown of American Diplomacy in the Far East," is now before the world. The Bolshevists have taken Omsk, and Irkutsk and are pressing eastwards. From Lake Baikal it is only a step across Mongolia to China, to the Pacific, to Japan. Japan is alarmed, as she well might be, but because of American intervention in Asiatic affairs, her government has been deprived of taking independent action for safeguarding its interests.

The original reasons for Allied cooperation in Siberia have ceased to exist. The situation in Siberia demands readjustment of the relations of the Entente Powers which participated in the original military movement into that country. The purposes of that movement were to aid the Czecho-Slovak forces against the pursuing Bolshevist army. Practically that has been accomplished.

Protection of vast military stores at Vladivostok was another purpose of the Siberian expedition. Most of these stores now have been distributed among Kolchak's forces. A third purpose was the protection of the Siberian railroad, useful only as a link of communication between European Russia and Vladivostok. Now that it has been cut by the Bolshevists west of Omsk, there is no further necessity for guarding what is left.

As all now apparently have been met, certain elements in Japan are warning their Government that complete American withdrawal from Siberia is to be expected, making necessary an early decision by the Japanese Government as to the course it will pursue.

Japanese newspapers declare that the Bolshevik menace is at Japan's very doors in the northern part of Saghalien, in Korea, and that the germs of the malignant disease are in China. An agitation has set in to meet it by increasing the Japanese army of 30,000 in Siberia, but it is declared that as the expense of such an undertaking, which at best could only insure the safety of that part of Siberia lying eastward of Lake Baikal, would be enormous, Japan would need cooperation by the Entente Powers and especially from the United States if such a policy were adopted.

What is the United States and the Allies going to do about it? Will we falter and fail and persist in blocking Japan and preventing her from checking the tide of Bolshevism and repeat the blunders we have made in Europe? For, to repeat the words of F. H. Simonds, the eminent authority on present European affairs, "the great protest in France to-day against American policy lies in the fact, that America, with perfect impunity as far as she herself is concerned, is arousing animosities and resentments which on the day of judgment will react upon the French, without any certainty that America will be there to help them bear the burden."

Why should America attempt to preserve order on a Siberian railway, which, in its last analysis, is simply another one of the many covert moves to block Japan's influence in that direction, and lay her open to future attack from her old enemies? Everywhere the Japanese turn they encounter American interference, objection and resistance. We have barred them out of the United States, and the Japanese Government has entered into a Gentleman's Agreement with us to meet our wishes. They are not wanted in Hawaii, nor in the Philippines. The Americans object to their presence in Shantung, we tried to deprive them of their fruits of victory in Manchuria by proposing the neutralization of the railways in that zone. We opposed their Demands upon China, we thwarted her attempts to arrive at a settlement with China, we concentrated our diplomacy upon her at Paris, and are now trying to penalize her and make impossible the defense of her empire by insisting upon the pooling of her railway and other concessions in the proposed Consortium, while permitting territories and valuable concessions held by other Powers to be excluded. And from an altruistic concern for the nascent germ of Democracy in Russia, we have opposed and thwarted her in Siberia. By our presence we have acted as a brake on her initiative, creating friction, jealousies, misunderstandings, and prevented thorough action in dealing with the situation that can only be done by an undivided responsibility. As in France, so in Siberia, where, when the storm breaks, and Japan is called upon to preserve herself and China from ruin, there is no certainty that America will be there to help her bear the burden. On the contrary, there is every certainty that we will be conspicuous by our absence. And now, when Japan is face to face with the menace of Bolshevism, what are we going to do?

There are no Japanese officers or men in the Red Army of Lenin. In Japan, alone of all the great nations, Bolshevist doctrines have failed to take root. On the contrary, it is a notorious fact that Lenin's bodyguard and executioners are mainly Chinese. The evidence placed before the Senate Labor Committee showed that the recent Red activities in Gary and elsewhere had their direct inspiration from Moscow and were aimed at the overthrow of the American Government by armed force. There is the same kind of evidence for the existence of a world propaganda. In an address delivered at Moscow, the soviet commissary, Lunacharsky, described the proletariat of China and India as "the natural ally of the soviet republic," and in August last Lenin formally invited the Chinese people to ally themselves with the Bolshevists, declaring that the "Red" forces were on the way with the gift of "freedom to the people, liberation from foreign bayonets and emancipation from the yoke of foreign gold

which is throttling the enslaved peoples of the east, particularly the great Chinese nation."

Lenin has his own Chinese bodyguard at Moscow, and it is from China that he hopes to draw recruits for the "Red" armies; something more than rumor also credits him with the ambition to use the Orient for the subjugation of the west. Bolshevist Moscow prints a newspaper for circulation in China and carries on Chinese propaganda through a Chinese department headed by Chun Yun-sun. Each envoy sent out by him is instructed to spread through China the statement that Lenin is a reincarnation of Genghis-Khan, come to life again to lead Asia to the conquest of Europe. Portraits of Lenin in Asiatic attire are being distributed broadcast among the Chinese, with the effect, it is said, of convincing the ignorant among them that he is, in truth, "their legendary national hero."

Evidence from the Dutch East Indian Government reveals the existence of a wide-spread Bolshevist conspiracy in Java and other Dutch East Indian colonies under the guise of an anti-Japanese boycott launched by Chinese Bolshevists. It is urged that the masses of China will reject Bolshevism. There is, however, ample evidence to the contrary. Fundamentally, there is no difference between the Bolshevist creed and the motives which influence most Chinese to don a soldier's uniform and shoulder a rifle. The history of the past several years in China produces overwhelming evidence that the average Chinese soldier enlists not to fight, but to loot, ravage and destroy. The records of the Taiping rebellion and nearly every other armed upheaval that unhappy China has passed through, confirms this finding. If Lenin, or any other leader, guarantees pay, loot, and the full gratification of their baser passions to the Chinese mercenaries, he would not lack a formidable following in that country. It is unwise to take any chances.

The United States and Europe are nearing a "showdown" in their Oriental policy. Japan cannot afford to wait. The Bolshevists have taken Irkutsk and from that base, China can be laid open to active propaganda and proselytizing, and the seeds of lawlessness planted in the Trans-Baikal, Amursk and Ussuri regions. It is time for America to realize that all we are doing in Siberia is exasperating the Japanese, exposing them to a herculean task of self-defense and generally complicating our international relations without serving any sensible national plan or policy.

It is also time for China to awaken to a realization of her obligations to the rest of the world, and shoulder her share of the responsibilities for the preservation of the peace of Asia. It is unlikely that a European or American army will be sent to the Far East to hold in check the Red Terror surging eastwards from Irkutsk. If China lays down, or opens her doors to the Red Flood, she must not blame Japan for taking adequate steps to preserve law and order. She will look and hope in vain for American sympathy if she is tried and found wanting in this crisis.

Complicated Coinage in China

There has been considerable talk of currency reform in China, but to date nothing tangible has been done. Recommendations have been made to the Chinese Government by Diplomats and by responsible organizations, and expressions of good intention have come from the Peking Government, but there the matter ends for the moment. An illustration of the extraordinary confusion caused by the multiplicity of taels and dollars current in one locality is given by the Commissioner of Customs at Foochow in his report for 1918. He says the currency confusion there is unique even for Foochow, and illuminates his statement as follows: Prices are reckoned in dollars, which are of every variety—Mexican, French, Hongkong, Straits, "Yüan Shih-k'ai," and yen, to mention a few of the silver coins. There are also paper dollars, but as these are only current in Foochow itself and are not accepted by the tea dealers, there is no need to enter into their intricacies.

The silver dollar, as soon as it appears on the market, is chopped by each money shop or firm through whose hands it passes. A clean, unchopped dollar is looked upon askance. The chop affixed may consist merely of an ink stamp, which does no damage to the coin, or may consist of the money shop's or firm's name —a form of guarantee—being stamped in by means of a sharp die, which actually defaces the coin.

A properly guaranteed dollar assumes a cup shape, not infrequently with a hole through the centre. Silversmiths levy toll by scooping out some of the silver. A clean dollar, once it escapes into circulation, comes back unrecognisable. Banks keep accounts in chopped dollars, but clean dollars may be bought and sold at differential rates.

The local currency, however, is not the dollar. There are two tael weights, of which the accepted standard is the Hsin-i-p'ing tael. 100 chopped dollars are represented, nominally, by 74.16 Hsin-i-p'ing taels. There is no official guarantee that the scales in use do not differ. 100 dollars, not over-chopped, if paid into a bank account, will generally be accepted by count, larger sums by weight; but a cheque drawn for similar amounts may realize the amount it is drawn for by count, may have an enforced 1 per cent. discount inflicted to cover good dollars issued, or may realize 102 or 103 or more pieces of silver, which may consist of some good dollars, some badly chopped dollars—which, however, may still pass for face value--and an assortment of what were once dollars but are now useless for any other purpose but to resell for their weight, attached to which transaction there is a gain or a loss, depending on the qualifications of the individual disposing of them.

The weights used for receiving and for paying out differ in some instances, the weight for receiving being Hsin-i-p'ing Tls. 74.16 and for paying a weight called a Yangp'ing tael, which is reckoned at 71.7 for each 100 dollars. Yangp'ing Tls. 100, however, equal Hsin-i-p'ing Tls. 103.3, so that the actual rate at which a depositor receives back his money is Hsin-i-p'ing Tls. 74.066. A depositor who cares to make the experiment may get rid of his capital if he takes the trouble to pay it in and draw it out a sufficient number of times. This is roughly the position of the Foochow silver currency. The rate of exchange between Foochow and Hongkong fluctuates. There may be a discount, or, at another time, the Foochow chopped dollar may reach an 8 per cent. premium against the clean Hongkong currency. In other words, 92 clean Hongkong dollars, duly passed through the chopping process at Foochow, become equal to 100 clean dollars at Hongkong. The rate of discount of local dollars on Shanghai varies between 1 and 4 per cent. The average Shanghai tael selling rates quoted for the past four years were: 1915, 71.48; 1916, 70.49; 1917, 71.35; 1918, 71.73.

Sufficient has been said to show that trade has to work under extraordinary conditions at Foochow, of which not the least extraordinary is the currency question. What is more extraordinary than all is that it has been submitted to for all these years. The remedy is simple, but it needs courage to face the vested interests. The first and necessary step would be a Government prohibition against defacing and destroying the dollars by chopping, the only chop admitted being the ink impression. The next step would be for the banks and public institutions to refuse all coins after a certain date which were in any way illegally defaced. Concurrently with this should come the abolition of the absurd currency by weight of coined silver. If weight by silver is a necessity for certain transactions, then it would certainly offer no difficulties to adopt one standard tael for Foochow which would admit of both tael and dollar accounts being kept. Present banking accounts in dollars could be adjusted by converting them into tael accounts, which would be in a fixed ratio to the clean Foochow dollar. The clearing of the market of the chopped dollar and the introduction of the clean dollar would have to be a matter of arrangement between the Government and the banks. Such is the situation at Foochow. It lies within the power of the Government and the mercantile and banking interests to bring the district back to the first rank or to leave it as a third-rate mart.

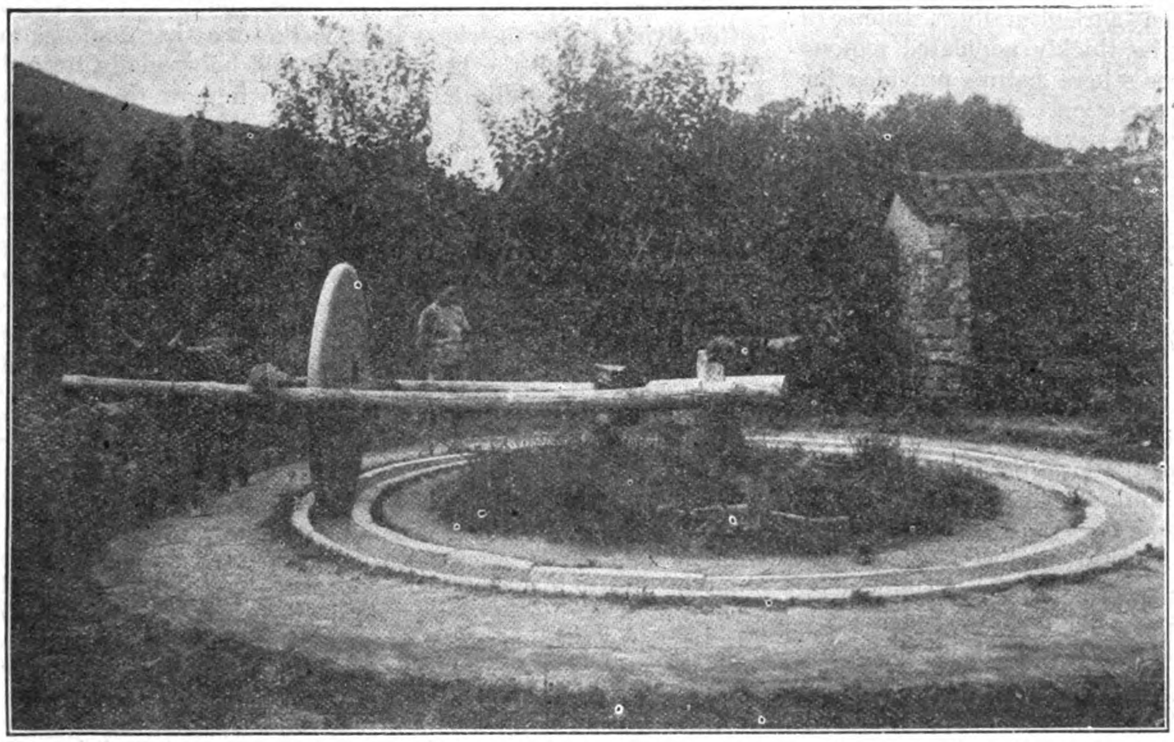
The Future of Agriculture in China

By C. Y. C.

1. *China as an Agricultural Country.*—With the extensive stretches of cultivable land and its vast population China has been for the last forty centuries and will be for ages to come essentially an agricultural nation. The natural fertility of the soil, the temperate climate, and the abundance of cheap but efficient labor enable her to produce raw materials in large quantities and at a lower cost than other nations. A glance at the statistical data published in the Customs reports will show that a large proportion of native exports consists of agricultural products. It may be summed up as follows:—

	1913 Tls.	1916 Tls.
Total export	403,000,000	482,000,000
Agricultural products	332,000,000	352,000,000
Non-agricultural products ...	71,000,000	139,000,000
Percentage agricultural products	82%	73%

The Szechuan and Shansi regions belong to this category, while pioneer work is necessary in opening up the outlying regions, such as Mongolia, Chinese Turkestan and Tibet. On the other hand, in spite of the efforts on the part of the Government and the people to promote industry, there has been little actual progress made; and from the very nature of the country and its people, such progress will be necessarily slow. The successful enterprises of the great industrial countries were not built up in a day and the necessary knowledge, experience, and capitalistic co-operation were only acquired through a long process of self-evolution. So, after a period of about three decades of all kinds of talk in China about industrial advancement, the sum-total of the result is just possibly about that of one industrial city, say, in the United States. China is and will be for some time to come essentially an agricultural nation, though she possesses the potentialities for great industrial development.



A Rice Mill in Chekiang Province. The huge wheel is of stone and crushes the grain as it revolves in the stone-lined trough, a bullock supplying the power

2. *Agriculture and National Finance in China.*—The state of national finance of China is daily becoming more stringent. The nation's liability has increased by leaps and bounds ever since the unfortunate war with Japan. Up to 1917, the total foreign obligations amounted to $2,971,000,000, or about three billions, two-thirds of which is represented by non-productive expenditures necessitating a yearly payment of about a hundred million dollars for interest alone. Further reckless borrowing has been indulged in since that time. In addition to this, the Customs returns have shown an unfavorable balance of trade year after year. The following figures will give us an idea of how much this item amounted to during the last ten years:—

Year.	Import.	Export.
1908	Tls. 394,505,478	Tls. 276,660,403
1909	418,158,067	338,992,814
1910	462,964,894	380,833,328
1911	471,503,948	377,338,166
1912	473,097,031	370,520,403
1913	570,162,557	403,305,546
1914	569,241,382	356,226,629
1915	454,475,719	418,861,164
1916	519,406,995	481,797,366
1917	549,518,774	462,931,630
Total	Tls. 4,883,034,845	Tls. 3,867,467,449

Unfavorable balance during 10 years Tls. 1,015,567,396

The high percentage of raw materials to the total export is maintained in spite of the very difficult accessibility of the interior provinces, the inadequate transportation facilities in others, the unnatural barriers placed upon the transit of goods (such as the *likin* duty and the embargo on rice, etc.) and the unsettled condition of the country which hampers the productive power of the nation. The completion of the Peking-Hankow line raised the export trade of Hankow from Tls. 7,140,000 in 1904 to Tls. 17,830,000 in 1909 and the extension of the Peking-Kalgan Line into Northern Shansi brought an increase of several millions in the export trade of Tientsin during a single year. Besides, there is plenty of other evidence to show the latent possibilities of the agricultural produce of the country if proper stimulation can be provided along the line of government protection and encouragement and of improvement in transportation facilities. The land is there, the labor is there, and in many localities the ready product is there, waiting for an outlet.

Even if, according to general economic principles, the unfavorable balance of trade is not necessarily unfavorable to a country, it is undoubtedly unfavorable as far as China is concerned. The remittances from the five million Chinese residing abroad are more than counter-balanced by the money

remitted back to their own country by the foreigners and the freight charges which have to be paid to foreign ship-owners. With the heavy liabilities of the Government and financial troubles throughout the country, the only alternative to bankruptcy is an increase in the export of produce. In the near future at least, such increase of exports cannot be expected of manufactured goods. Only in the agricultural field can we reasonably hope for a rapid rise.

Generally speaking, the burden of taxation ultimately falls upon the tillers of the soil. Especially is this true of China. For thousands of years, the farmers have contributed to the maintenance of the Governmental super-structures, forming the backbone of the country. A rough estimate of the Chinese population at the present day easily places the farming elements as representing 80 to 90 per cent. of the grand total. They are certainly the most important if not the most influential class of people. If the financial regeneration of China is to be accomplished in the near future, agriculture will undoubtedly be the principal source of the nation's wealth.

3. *The Present Conditions and most Desirable Reforms.*—In spite of the extensive area capable of production and almost unlimited supply of cheap labor, China cannot be said to be half developed even agriculturally. Intensive farming is only practiced in the thickly populated regions along the sea-coast and in places where nature provides for easy and ready means of transportation. In the interior provinces, lands are cultivated to the extent of providing for the necessities of the local residents in the more or less limited district. While in the out-lying regions, vast tracts of fertile land remain in the state of virgin wilderness. Besides, there are still large areas to be found even in the so-called populous provinces such as Kiangsu, Anhui, etc., which have either been abandoned or remain fallow on account of lack of protection from lawlessness or too frequent floods. Even in those intensively cultivated areas, there is always room for further improvement. The Government has done little or nothing to ameliorate the situation, but has, on the contrary, caused devastation in a number of the localities by its military campaigns, or hindered the natural development by unwise legislation. The industrial promoters, on the other hand, have paid little attention to these rural interests. Nevertheless, a far-sighted policy for the future welfare of China will inevitably give prominence to a thorough going scheme of agricultural reformation. Such a scheme will involve two distinct branches of work, *i.e.*, the direct and indirect reforms. To investigate the climatic and soil conditions, to try out and introduce improved methods and implements of cultivation, and to devise means of improving the quality and quantity of production are reforms directly concerning agriculture in its technical sense; while the indirect reforms will include a revision of the tax system, abolition of *likin* duty, the accordance of better protection to the farmers, and provision for better facilities for transportation, communication, and irrigation, as well as financing (such as an adequate agricultural credit system). In fact, most of the administrative reforms which the country is clamoring for and greatly in need of have far-reaching influence upon agriculture in general. The scope, however, is so wide that even a general discussion is out of place in the limited space of the present treatise. The following statement is made to set forth a program of desirable reforms in the direct sense.

First of all, a system of agricultural associations should be established—similar to the educational associations now in existence. With central head-quarters in Peking, branch associations should be instituted in every province with expert agents distributed in every district or " Hsien." The association should be wholly independent, and free from political interference, but the Government should contribute to the maintenence of the central head-quarters, and the provinces to that of the branch associations, while each district should be held responsible for the cost of keeping one expert agent and his office. Supported in this way, the burden of the necessary expenses should not be very heavy upon any one source, and it provides for a course of gradual development. The work of the association may be conveniently outlined as consisting of three distinct steps: (1) investigation into the local conditions and collection of the necessary data, (2) devising means of possible improvements and plans to carry them out, (3) to conduct short courses of simple agricultural training, lecture tours, exhibits and fairs in order gradually to interest the farmers in the new ideas and convince them of their practicability. In order to know how to improve, one must be thoroughly conversant with the actual conditions which vary widely in different places, hence the necessity of detailed investigation. After securing the necessary data, it is up to the experts of the association to determine how and where improvements are mostly needed and test them out if required. In this connection, the association should take upon itself the task of urging the various administrative reforms which would be of benefit to the farmers. As a last step, the appeal is made to the farmers themselves by showing them what they could do to make a better living. The district expert is the one that comes into direct contact with the people and should be specially trained not only in the technical sense but also in how to approach and associate with the farmers in order to be able to exert the greatest influence. It is really a kind of missionary work. With such an organization properly instituted and working hand in hand with the Ministry of Agriculture and Commerce, the agricultural schools and experiment stations as well as with the educational associations, rapid progress among the farming population might be expected. A substantial increase of the farm produce will be one of the most dependable means of saving the nation from possible bankruptcy.

More Liners on the Pacific

That a number of passenger liners will be placed on the run between Seattle and China and Japan is indicated in a report made by John H. Rosseter, former director of the United States Shipping Board. He recommends that the Shipping Board proceed at once with the construction of seventy high class cargo liners and ten smaller passenger vessels. He favors having private companies build and operate large, first-class passenger ships.

In his report to the board, Mr. Rosseter recommends strongly against permitting any of the former German vessels being retained by the War Department as transports. Mr. Rosseter would use these craft for passenger liners.

The Shipping Board has made good its pledge to construct 6,000,000 tons of shipping in the year 1919, it is announced by John B. Payne, chairman of the board. By December 31 the board delivered 6,000,000 deadweight tons of shipping. On December 1 it had completed, in 1919, 5,818,500 deadweight tons as follows: Steel 4,472,000; wood 1,298,000; composite (steel and wood) 42,000; and concrete 6,500.

The actual construction program on December 1 showed 2,314 vessels of which 2,240 had keels laid, with a tonnage of 12,926,486 deadweight. There were 1,910 ships of that number launched with a deadweight tonnage of 10,494,047 of which 1,674 vessels had been delivered up to December 2.

In a statement issued by the Shipping Board it says: " Within the last week the Pacific Coast needs for more ships for the Orient were called to our attention by a delegation. We are now caring for the cargo movement and expect steadily to increase our fleet there. The crying need for passenger vessels, which we realize, and which was again called to our attention by the delegation, we regret we cannot fill until the summer of 1920, when the construction of our passenger ships is expected to be completed."

New Building for the Hongkong and Shanghai Bank

WORK will be started in Shanghai shortly on the new Hongkong and Shanghai Banking Corporation building which is to cover an area of 62,000 square feet from the Custom House to Foochow Road and will extend from The Bund to Szechuen Road. The structure will be completed in two years at a cost estimated at Tls. 2,000,000. The land which it will occupy is valued at Tls. 2,500,000.

The new premises will be erected on the site now occupied by the Hongkong Bank, the old Kelly and Walsh Building and Messrs. Thomas Simmons and Company offices and will extend along Foochow Road to the building owned by Messrs. Caldbeck, Macgregor & Company.

The new building will consist of five storeys and is designed in a quadrangular form with an internal open space above the Banking hall. It will be one of the largest structures in the Far East. When it is realized that the roof alone will be as high as the Customs tower, some idea of the grandeur of the undertaking may be formed. The commanding situation and setting of the building will lend magnificence to the structure, the site itself giving an opportunity seldom offered to the designers: it will conform in its proportions to the situation where it will be seen by the mercantile fleets of the world. Isolated from any other structure, the building will have a facade of 300-ft., facing the river, and a return frontage on Foochow Road of 220-ft., and will be surrounded by a raised Rodium on which will be placed statuary and vases for shrubs. Frontage will also be obtained on Szechuen Road. While alterations will doubtless be made to the design given here, the general effect will be very much the same. Sculpture on the fronts will represent Industry, Labour, Agriculture, Time, Justice and the Arts.

The principal entrance to the Bank, from the Bund, will be formed of heavily rusticated arches surmounted by a Corinthian order of columns, which with the storey and balustrade above will reach the height of 110-ft., and this height will prevail all the way round the frontage and return.

All the facades will be built of Hongkong granite, noted for its bright cream color and texture, and the crowning feature of the structure will be the copper-covered and enriched dome over the grand entrance. This will reach to a height of 162-ft. and will terminate in a lantern, the diameter of the dome being 56-ft. A bright band of color will be formed in a golden mosaic at the base of the dome, 10-ft. wide.

The first impression of the spacious interiors will be gained on entering the vestibule from the outer portico, the dimensions of which are 65-ft. long by 20-ft. wide. The walls will be of Hongkong granite, and the three massive arches will be filled with bronze gates, the entrance doors being of the same metal. Above will be stained glass windows in heraldic designs. The vestibule, forming part of the public space, will be 65-ft. wide and 28-ft. high, the walls will be of Brescia or other selected marble and the ceiling will be enriched with modelled plaster work. All the doors and joinery will be of walnut enriched with inlay work.

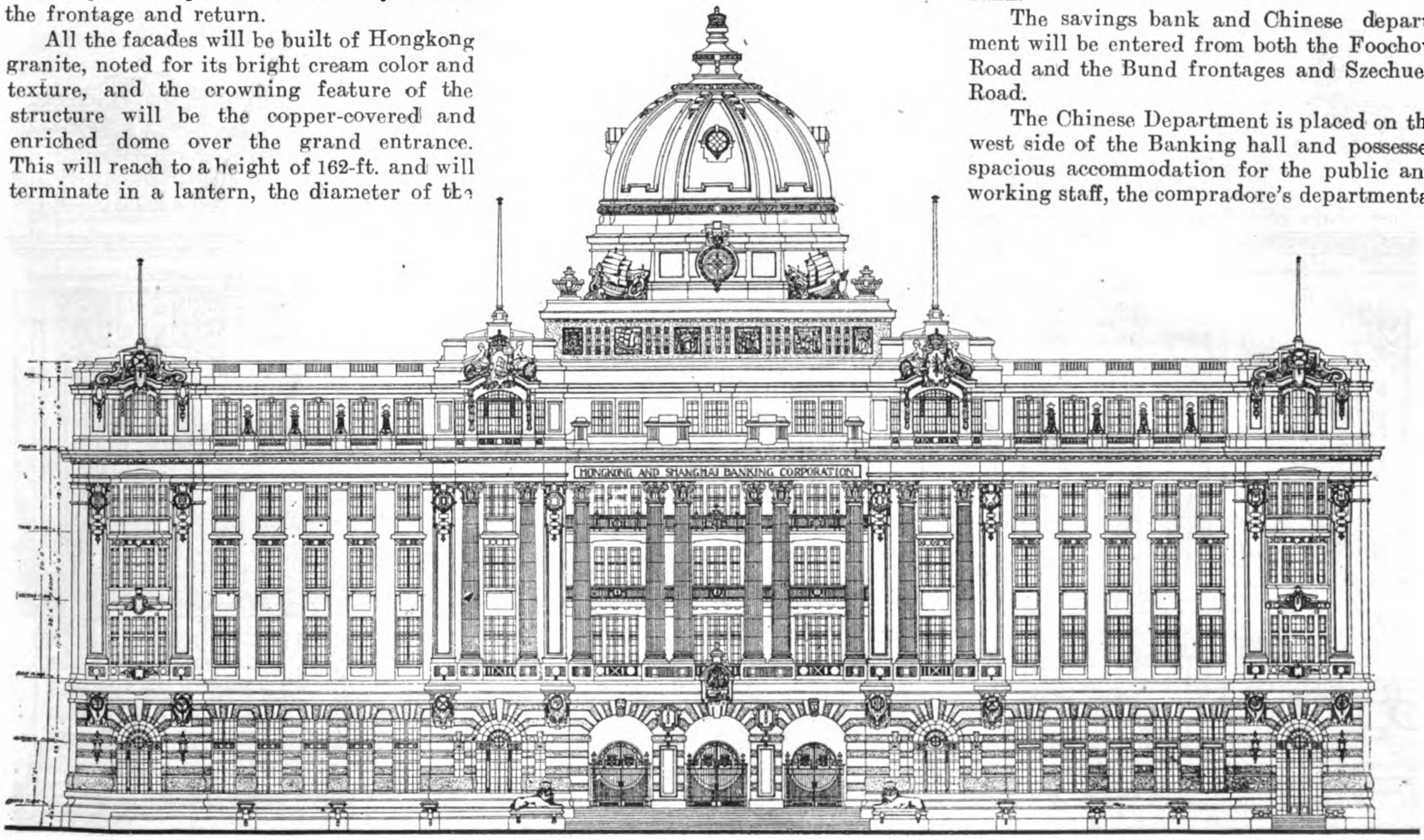
The banking hall, occupying an area of 21,500 square feet will have its ceiling supported on 40 columns covered with marble, the ceilings will be coffered, and the hall will contain the latest and most practical features of modern banks suitably arranged for the climate.

The fenestration of the hall will be such as to secure excellent light from three sides, with a barrel-vaulted roof of reinforced concrete with glazed lighting spaces, and arrangements for killing any glare from the sun. At either end of the vaulted roof will be painted and modelled panels representing Agriculture and Commerce.

The public space for the transaction of business will be 60-ft. by 20-ft. connecting directly with all departments with two entrances from Foochow Road and one from Szechuen Road. Marble counters with grilles and departmental signs will be installed, the walls will be of marble and tiles of approved texture and color, while a feature of the hall will be the marble bridge connecting the tiffin and changing rooms on the mezzanine floor. Contiguous to the vestibule will be the brokers' waiting room and the private office, both of which will have direct communication with the manager's office, beyond which will be some of the departmental offices of the bank.

The savings bank and Chinese department will be entered from both the Foochow Road and the Bund frontages and Szechuen Road.

The Chinese Department is placed on the west side of the Banking hall and possesses spacious accommodation for the public and working staff, the compradore's departmental



Front Elevation of the New Building for the Hongkong and Shanghai Bank, Shanghai

offices having direct road frontages on Foochow Road and connecting directly with the Chinese portion. Tiffin rooms, changing rooms, ample lavatory accommodation and a shroffs' dining-room will adjoin their department. The treasuries and book rooms are spacious and will be constructed with observation corridors round them, the outer walls of which will be of reinforced concrete having special lattice bars in the formation of same. The walls of the treasuries proper will be of reinforced concrete and be made proof against interference and intrusion by the adoption of the latest approved materials- ventilating and fire resisting appliances.

Situated on the upper floor are suites of offices and access to these may be had from four stairways for use of the public. The wall of the stairway will be lined with grey tiles. Six lifts will carry the public to any of the offices they desire to visit. In addition to these lifts service elevators will be installed, with special coolie stairways adjoining, to connect with all floors for distributing the daily chits and other articles. These service stairways will all have sanitary angles and be supervised and controlled by watchmen. Space will be provided for the storage of cycles, and rooms will also be provided for the use of coolies only on every floor with modern lavatory accommodation. Garages and ricsha sheds will be provided so that they can be entered from the two wide private roads connected to the Bund and Foochow Road and Szechuen Road and connecting directly with public and private entrances.

The chief accountant's office, security and coupon rooms are on the right of the Bund vestibule. Private rooms for the Bank's customers will be provided. The floors to the administration portion of the building will be of selected oak, and the public spaces and corridors of mosaic with all sanitary angles and corners. The ornament generally will be appropriate, straightforward and refined. White shutters will be provided to all the windows having sunny aspects so that the steel and bronze windows will open out fully to attract any breezes going: ample extract fans and ducts will be provided in addition to the natural ventilation.

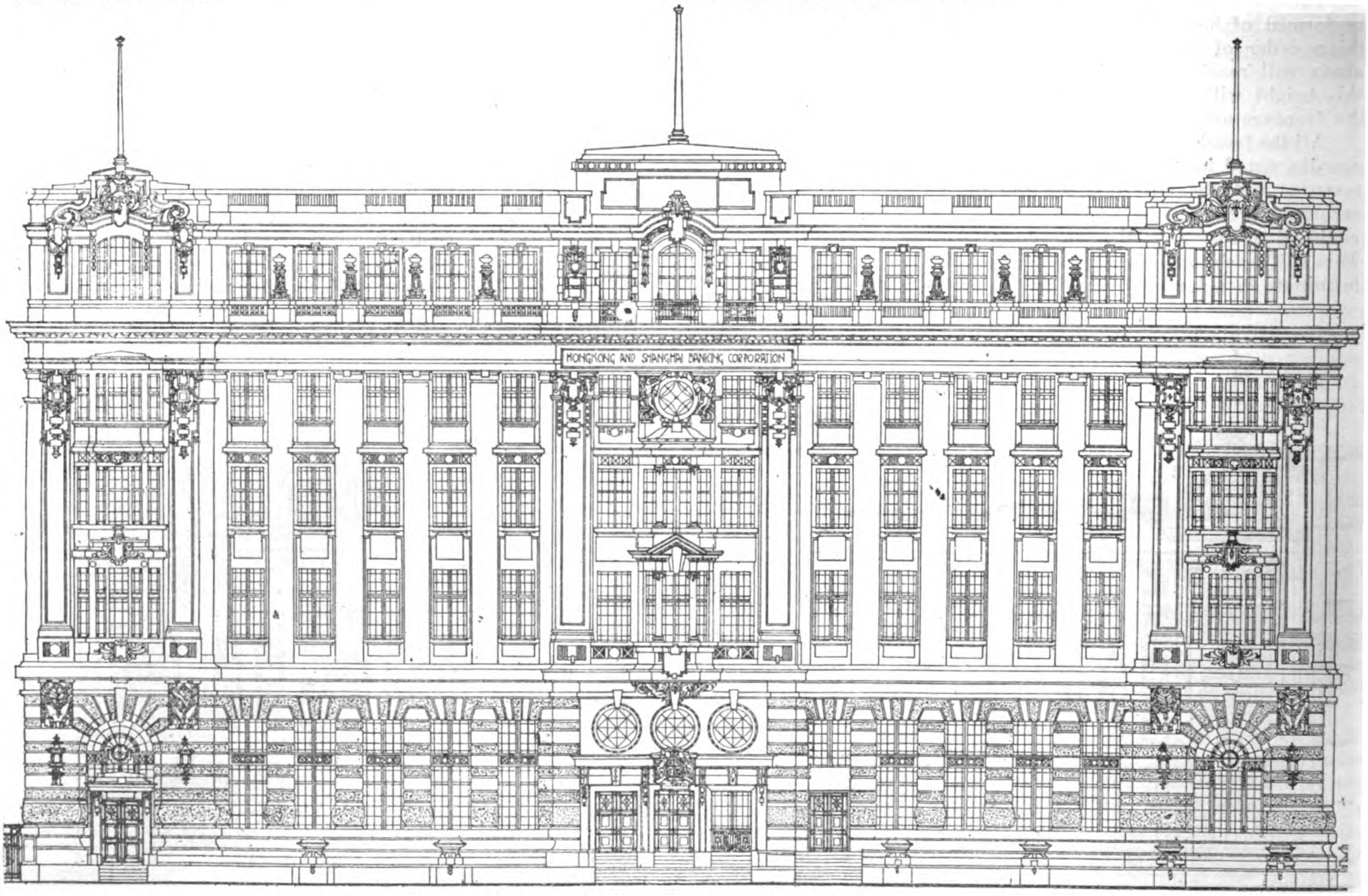
On the third floor the manager's flat will be arranged, all self-contained with its own private staircase, and lift, and fire exits. The private entrance hall to the residence connects also with the administrative part of the Bank. The suite of residential rooms will consist of a salon, large dining-room with large verandah, 70-ft. by 20-ft. and in addition a sun room with verandah garden adjoining. Service rooms will be in connection with the dining and reception rooms and a private office with telephone in connection with the entrance.

On the floor above, eight bedrooms, boudoirs, all with bathrooms and sleeping rooms will be at the back of the building where they will have their own open air space with covered ways all round and rooms and lavatories and kitchens *en suite*. The servants will thus be isolated and a bridge will connect their quarters to the domestic service department.

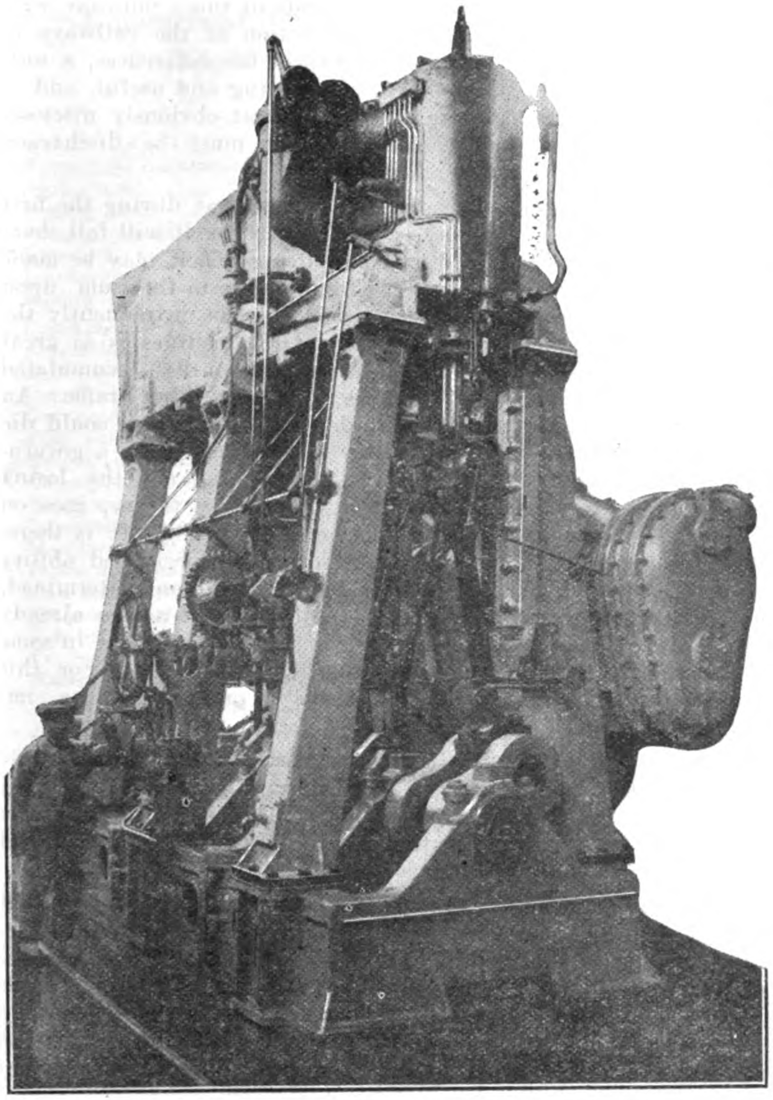
The windows throughout the building will be of steel and those to the ground floor bronze all glazed with polished plate glass or selected braided glass. The locks will have bronze fittings of the most substantial description and be all answering to a master key for each department but the whole of the locks will be controlled by one grand master key. The sanitary arrangements will be the most up-to-date, every lavatory being cut off from the offices and separately ventilated.

The roofs are flat with an isolated chamber below ventilated and cooled by introducing cold currents of air into the chamber so that the building will not feel the effect of the sun's rays on the roof garden. The whole of the external stonework will be in Hongkong granite which has a pleasing color and texture. The whole of the work will be carried out in fire-resisting materials chiefly reinforced concrete but in the weightier portions of the structure will be of steel frame construction.

In the building of the structure the latest derrick cranes with 50-ft. steel lattice jibs will be used with all the latest hoists. By this arrangement stone up to 10 tons can be picked up from the road frontage to proceed in their position on the building. The architects responsible for this imposing building are Messrs. Palmer and Turner.

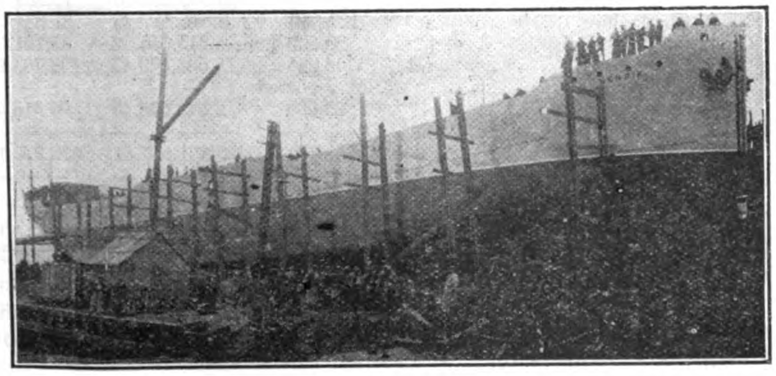


Elevation on Foochow Road of the Hongkong and Shanghai Bank Building, Shanghai



The Engines for the s.s. "Henrik"

The engines with which the s.s. *Henrik* is equipped are triple expansion surface condensing engines indicating about 1,100 horse power. The engines, boilers, and most of the auxiliary machinery were built by the New Engineering and Shipbuilding Works at their Yangtszepoo Works, Shanghai.



The s.s. "Henrik" before Launching

The s.s. *Henrik* was launched last month at the Yangtszepoo Works of the New Engineering and Shipbuilding Works, Shanghai. She has a deadweight carrying capacity of 2,050 tons. Her length overall is 254ft. 6in.; beam 37ft., and moulded depth 17ft.

The Min River Conservancy

In his report on Foochow for 1918 the Commissioner of Customs says: The Min River Conservancy scheme has been adopted by the local mercantile interests and has received the assent of the Chinese Government and of the Diplomatic Body. The total estimated expenditure of $900,000 is to be covered by a loan which will be served and secured by a conservancy tax of 5 per cent. on all dues and duties paid at the Maritime and Native Customs, which includes goods which have paid duty elsewhere on entry into China and are exempted from further duty payment at Foochow. Steamers over 500 tons, ascending the river to Foochow itself, pay a tax of 5 cents a ton, while vessels of under 500 tons pay 3 cents a ton. There is also a tonnage tax on all sea-going junks ascending the river above a certain point, as well as a fixed tax of $5 a month on passenger launches. A cargo-boat pays a tax of $1 a month; treasure pays ½ per mille *ad. valorem*. The Chinese Government Salt Bureau is to pay an annual contribution, the amount of which, however, has not yet been fixed. The actual local government contribution is $18.000 a year. It is estimated that the annual income to be derived from taxes and contributions will not be less than $90,000. The work is to be completed within three years from commencement, although it is believed that actual results will be apparent considerably before this. The collection of the taxes and the financial transactions are vested in the Commissioner of Customs. The actual administration will be in the hands of a committee of three, a Chinese Government representative, a representative of the local Consular Body, and the Commissioner of Customs. The object is to admit of coasting steamers of 16 to 17-ft. draft ascending the river right up to Foochow, thus avoiding the double transhipment at present necessary. The harbor space at Foochow is ample and can even be increased, if necessary, by an extension of the present limits. The construction of wharves will have to follow as a natural course as soon as visible results are attained, but in this the shipping companies will have to study their own convenience. The proper lighting of the river will have to be undertaken as the work proceeds. In one respect, at least, Foochow can claim to be ahead of other ports and to be congratulated: the scheme only took six months after its adoption locally to pass through the customary diplomatic channels and receive official sanction. The usual length of time, judged by other places that have undertaken conservancy work, may be measured by years.

Early in January a new weekly paper appeared in Shanghai under the title of "China and Far East Finance and Commerce." The subscription per annum is put down at Tls. 20 equivalent approximately to Mexican $26. For this the proprietors of the new paper claim to be able to give adequate value weekly. The first issue of the paper is of good appearance, and contains a quantity of commercial articles, market reports, financial and shipping information. Its sphere of usefulness will no doubt develop as soon as the editors have got over the unquestioned difficulties of starting a new journalistic enterprise. We believe that the enterprise of the editors will enable them to fill a want of this country. We wish them the fullest meed of success.

The Rt. Hon. Sir John Jordan, P.C., G.C.I.E., K.C.B., K.C.M.G., H. M. Minister at Peking, has booked to leave China for good by the str. *Cashmere*, leaving Shanghai early in March.

The largest and most powerful wireless station on the Pacific coast commanding sufficient power to communicate with the Hawaiian islands, Arctic Alaska and probably the Orient will be in operation early this year at Keyport, Washington, across Puget Sound from Seattle. The station, towering 400-ft. in height, was ordered built by the United States Bureau of Yards and Docks of the navy. The station will be completed within 180 days. The structure will be of steel ninety feet in diameter at its base and five feet at the apex of the 400-ft tower.

Railway Bridge Floors

It is of interest to engineers in China to note that the tendency of American engineers to use longer panel lengths for railway bridges continues to increase. The latest example is that of a double track bridge of 430-ft. span, consisting of 10 panels of 43-ft. The editorial in the latest number of the "Engineering News Record" comments with regard to this type of construction as follows:—Long paneling as used in the Coal Valley bridge of the Monongahela Southern Railroad Company, is in harmony with progressive views in modern railroad-bridge design. The reason for using 43-ft. panels is that the truss is improved by simplification. This means reduction of secondaries and reduction of field connections, two important advantages. They may be gained at the cost of some added metal, but there is at least one auxiliary advantage that helps to counterbalance the loss. The mere increase in weight of the floor is an advantage, by no means negligible, as it produces a solidity very favorable to the suppression of live-load impacts. Since experience has shown plate girders to possess a higher degree of reliability and reserve of strength than is credited to trusses, ultimate economy, doubtless, is on the side of long panels as compared with short panels, even though weight comparison of design may point the other way. On this account it is not impossible, we think, that the same reasons which argue for a moderate increase in panel lengths would also hold for the use of much longer panels, which would involve going to bridge proportions of quite unusual kind. Useful results in this direction, however, are more likely to be reached by progressive development than by a single radical step away from recognized practice. This bridge was designed under the supervision of the Chief Engineer of the Railroad Company and was fabricated and erected by the American Bridge Company.

Investment Assets of Chinese Government Railways

The table below gives the Investment Assets or book value of the property of the Chinese Government Railways. Investments assets include (1) Cost of Road and Equipments, (2) Cost of other Physical Property, and (3) Cost of Non-physical Assets. Other Physical Property refers to property such as land, mills or mines not a part of the operated railways, but which have been paid for out of the sums represented by mortgage bonds, Government investment, and similar capital liabilities. Non-physical Assets consist of stock and bonds of other companies, the purchase price of rights, and similar intangible property. The total of these three groups is the sum upon which a normal annual return must be earned before the property as a business undertaking can be said to have attained the condition of a profit bearing enterprise.

The total cost of Chinese Government railways listed herein, on December 31, 1918, as compiled from the reports of the lines, was $428,401,534.31 From this it appears that the railroads of this country show an average cost of $78,275.19([1]) per kilometre of line, or $125,971.39 per mile. This is an increase of $2,761.06 per kilometre of line during the year. Much of this is due to the purchase of National Bonds during the year, but much also is due to the constant addition and betterment which must be made to going concerns. Every line shared in this. increase.

Railroad properties are usually of such magnitude, composed of such a variety of parts, and constructed under such dissimilar conditions, that a mere statement of cost conveys little to the mind. It is essential, therefore, that such costs should be expressed in the terms of a known unit of some kind. Length of line is the only kind of unit which has been attempted, but manifestly it is very crude. In the nature of things it makes no allowance for amount or character of excavation or embankment necessary, the length or character of bridges in place, the number, size, or material of buildings, and many other matters which profoundly affect costs. Yet in the hands of those familiar with the conditions surrounding the construction of the railways in question and expert in making allowances for differences, a unit cost per kilometre of line is very enlightening and useful, and to the most casual reader such an average cost obviously discloses the relative burden upon each line which must be discharged before it becomes a commercial success.

It has been almost universal experience that during the first few years in which a railway is open for traffic, it will fall short of earning a normal return. The resulting deficit may be made up in a variety of ways, but in effect it adds to the sum upon which the annual return must be earned. Not infrequently the disparity between net revenues and interest charges is so great during these first years, that interest upon the accumulated deficit mounts faster than revenues from increasing traffic. An ordinary commercial enterprise under such conditions could die a natural death through bankruptcy proceedings. But a government enterprise, in theory at least, is immortal, and the losing race between revenues, and interest charges, in theory, goes on forever, with the gap between them ever widening. It is therefore a subject requiring the highest order of specialized ability to decide, even after the route of a line has been determined, how much can be invested in it. In the case of a line already in operation the program for extension and improvement in some instances may turn upon the same considerations. For this reason, this table of Investment Assets is one of leading importance.

It is worthy of note that the two relatively most unprofitable lines head the list. It may be argued that these are short lines, and for that reason are unprofitable. The point is well taken but emphasizes all the more the low limit which must be imposed on the investment in short lines.

In comparisons like the above, it must be remembered that the character of the construction and the efficiency of the engineering are not the only factors determining the cost of construction. Chinese Railways have been built largely from funds secured abroad. The rate of exchange by which these foreign monies were converted into Chinese currency, obviously has an important effect. The bearing of exchange upon a program of construction must therefore not be overlooked.

INVESTMENT ASSETS OF CHINESE GOVERNMENT RAILWAYS.

Name of Line	Kilometres Owned	Total Capital Investment	Cost per Kilometre
Peking-Hankow	1,305.671	$102,665,955.53	$78,630.80
Peking-Mukden	986.650	69,771,530.14	70,715.58
Tientsin-Pukow	1,106.840	101,437,711.31	91,646.23
Shanghai-Nanking	327.098	30,711,074.71	93,889.52
Shanghai-Hangchow-Ningpo ...	286.398	22,125,378.23	77,253.96
Peking-Suiyuan	490.493	28,956,593.91	59,035.69
Cheng-Tai	242.950	22,137,584.75	91,119.92
Taokow-Chinghua	152.453	7,377,984.47	48,395.14
Kaifeng-Honan	185,000	13,558,555.70	73,289.49
Kirin-Changchun	127.669	6,616,317.76	51,824.00
Chuchow-Pinghsiang	90.500	4,813,836.22	53,191.56
Canton-Kowloon	143.296	15,585,379.13	108,763.53
Canton-Samshui	(Not reported)	—	—
Changchow-Amoy	28.000	2,643,632.45	94,415.44
	5,473.018	$428,401,534.31	$78,275.19

As was pointed out more fully in last issue of this paper the net operating revenues during 1918 amounted to $43,329,537.83, and the surplus for the year $33,505,119.57. This revenue was earned by the carriage of 25,475.379 passengers and 18,551,684 tons, being an increase over 1917 of 41,801 passengers and 1,815,050 tons of freight.

([1])

Country	Capital per kilometre of line	Country	Capital per kilometre of line
Australia	G.$34.243	South Africa	$30.153
India	28.796	Germany	74.595
Japan	55.074	United States	40.986
Russia	54.939		

Bulletin No. 100 Bureau of Railway Economics.

Commercial Organizations Registered in the Philippine Islands during the Year 1919.

	Number	Capital Stock.	Capital Subscribed.
Extractive Industries	*59*	*P.5,013,800*	*P.2,446,750*
Agriculture	46	3,329,800	2,033,000
Fishing (fish)	1	40,000	21,750
Fishing (pearls)	1	24,000	15,000
Livestock	3	310,000	68,500
Lumbering	6	790,000	201,700
Mining	2	520,000	106,000
Commerce	*90*	*22,560,300*	*6,658,624*
Automobiles, dealers in	1	1,000	500
Building and loan associations ...	2	35,000	20,100
Commission and brokerage	1	10,000	2,070
Dry goods	1	400,000	400,000
Film exchange	1	30,000	12,575
General merchants	51	10,688,500	4,555,939
Grocery and drug stores	4	120,000	93,210
Hotel and restaurants	1	175,000	35,100
Importers and exporters	6	990,000	170,000
Machinery merchants	2	850,000	225,000
Paper merchants	1	200,000	49,400
Real and personal property dealers	1	10,000	10,800
Shoe merchants	1	250,000	75,000
Tobacco merchants	2	525,000	316,000
Transportation companies	14	10,775,000	592,930
Warehouses	1	500,000	100,000
General Manufacturers	*46*	*10,921,104*	*4,169,264*
Aerated water	1	2,000	2,000
Distilleries	1	22,000	22,000
Electric light and power	5	231,000	101,800
Embroidery establishments	3	1,035,000	1,007,000
Engineering construction and repair	3	75,000	20,000
Fertilizer factories	1	100,000	25,000
General Manufacturers	4	610,000	180,600
Hemp stripping	1	40,000	8,000
Oil factories	3	650,000	430,000
Photo studios	1	10,000	2,000
Printing and publishing	6	345,000	123,050
Rice mills	8	335,904	297,314
Saw mills	1	15,000	9,500
Sugar mills and refineries	7	7,351,000	1,916,000
Tobacco factories	1	99,000	25,000
Miscellaneous	*77*	*231,500*	*95,700*
Education (private schools)	30	59,000	14,000
Estate administration (church) ...	2	—	—
Publicity	1	—	—
Religious and charitable associations	4	—	—
Social and recreation	40	172,500	81,700
Grand Total ...	272	P.41,726,704	P.13,370,338

Shanghai Tramway Operations

The following are the traffic returns of the Shanghai Tramways for the weeks ended January 7, 14, and 21:—

The week ended January 7.

Gross Receipts $41,854.76 as compared with $36,045.45 in 1919.

Loss by currency depreciation $10,763.28 as compared with $8,487.68 in 1919.

Total Effective Receipts $31,091.48 as compared with $27,557.77 in 1919.

Percentage of loss by currency depreciation $26.84 as compared with $24.70 in 1919.

Car Miles run $87,999 as compared with $79,092 in 1919.

Passengers Carried $1,866,706 as compared with $1,637,061 in 1919.

The week ended January 14:

Gross Receipts $40,830.73 as compared with $33,158.08 in 1919.

Loss by currency depreciation $10,307.88 as compared with $7,550.05 in 1919.

Effective Receipts $30,522.85 as compared with $25,608.03 in 1919.

Percentage of loss by currency depreciation $26.60 as compared with $24.14 in 1919.

Car Miles run $88,913 as compared with $78,771 in 1919.

Passengers Carried $1,832,787 as compared with $1,505,191 in 1919.

The week ended January 21:

Gross Receipts $41,076.47 as compared with $35,033.67 in 1919.

Loss by currency depreciation $10,376.02 as compared with $7,883.55 in 1919.

Effective Receipts $30,700.45 as compared with $27,150.12 in 1919.

Percentage of loss by currency depreciation $26.72 as compared with $23.80 in 1919.

Car Miles run $88,595 as compared with $81,523 in 1919.

Passengers Carried $1,843,106 as compared with $1,594,229 in 1919.

Engineering Expansion at Manila

The Honolulu Iron Works has just acquired by purchase one-half of the controlling interest of the Earnshaw Slipways and Engineering Company, Manila, at P3,500,000, the two entities to be later fused into one single corporation to be capitalized at P10,000,000 to go into marine engineering and into the manufacture of machinery for sugar centrals more extensively than each, as separate companies, has done in the past. This is considered one of the biggest business transactions to be consummated in Manila for many years.

Thomas Earnshaw, who, with his brother Manuel, owns the Earnshaw Company, when interviewed by a representative of the FAR EASTERN REVIEW, declared that it is his intention to increase the plant and to start competing in all the marine engineering fields, such as dry docking, boat constructing and repairing. The Honolulu Iron Works will install a big plant near the Earnshaw Slipway for the manufacture of sugar machinery for sugar centrals.

Manuel Earnshaw and president Davis of the Honolulu Iron Works are now on their way to Manila, and when they arrive the details of the consolidation of the two companies into one single corporation will be fully gone into.

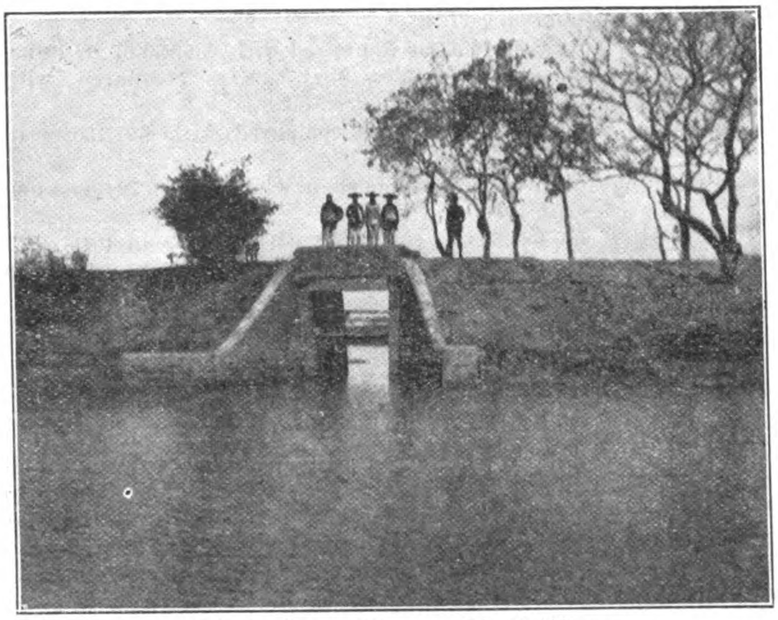
In order to provide for the development of the big corporation, the Earnshaw Slipways and Engineering Company has applied for the lease of a large block of land in the Port District immediately joining the site where the company is now located.

Employees on China's Railways

"For every three and a half officers and clerks employed on the Chinese Government railways there is a servant to wait upon them," is a candid remark in the 1918 report of China's lines.

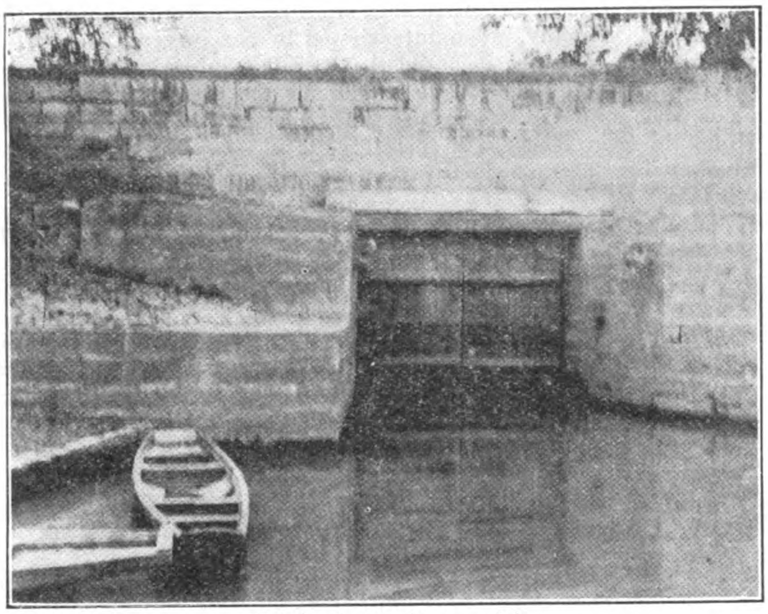
The total number of employees of the Chinese Government railways in 1918 was 63,795 compared with 60,447 in 1917. This is an increase of 5½ per cent. Over 40,000 of this total are engaged in manual labor, either handling goods, or keeping up the condition of cars, nearly 30,000 are engaged in keeping the machinery and roadways in repair. Clerks outnumber the men handling the trains. More men are employed in policing the line than in running trains over the line. 20,756 men are in the Engineering Department; 14,724 men are in the Locomotive Department; 5,231 men are in the Running Department; 11,750 men are in the Traffic Department; 3,521 men are in the General Administration Department; 537 men are in the Telegraphic Department; 6,878 men are in the Police Department, while other departments employ 398. Compared with railways in many countries, the Chinese lines are heavily manned. This is partly due to the higher labor wage in such countries, which is encouraging the use of labor-saving machinery in offices as well as in the handling of physical things. The higher price of materials in China, due to distance from source, leads to a great deal of repair where in Europe or America purchases of new parts would be made.

It has been decided to open the new Netherland-Indian Annual Industrial Fair at Bandoeng (Island of Java) on May 17, 1920. The object of the Fair is to promote native and foreign manufacturing industries in the Netherland East Indies. It will continue for a fortnight, unless a longer term seems desirable.

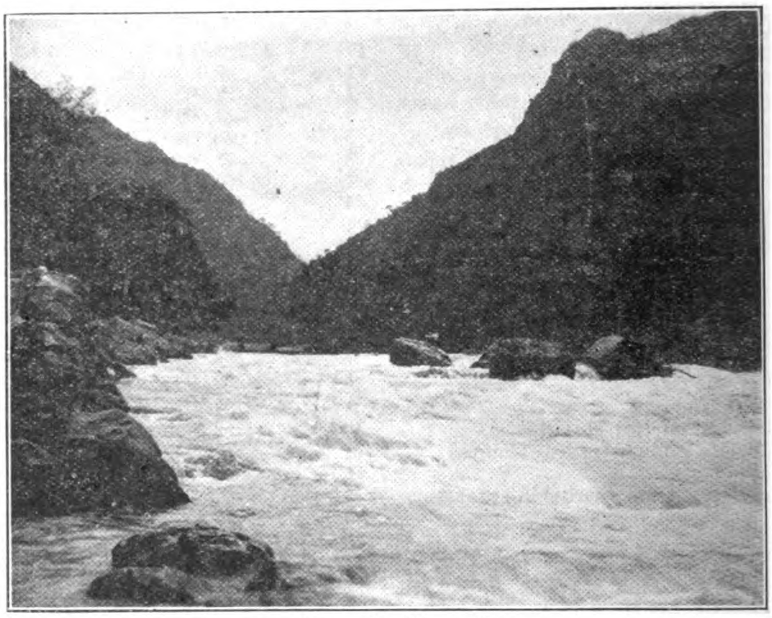


Old flood gate, Shantong North River

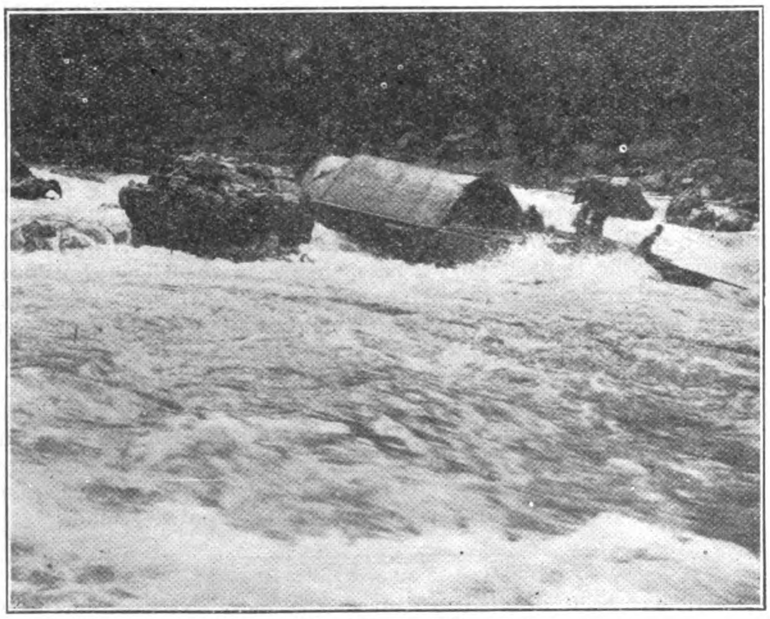
Rapids in the Yung-kiang



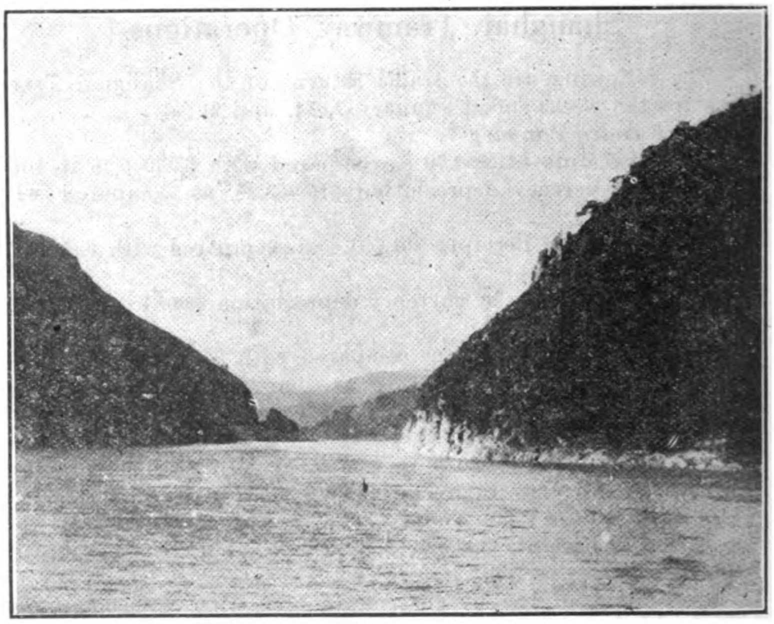
Old flood gate, Lower delta



Rapids in the Yung-kiang



An exciting jump ! Yung-kiang



The Mongtze Gorge, North River

Scenes on the North River, South China, referred to in the article on "The Flood Problem at Canton" on page 98

China's Great North-West

III.—Travel in the Ordos Desert

By Rodney Gilbert

A few hours after sunrise the next morning we came to the last fresh water spring and the last group of trees which we saw in the Ordos and ten *li* further on we wound into a defile in the dunes of black sand and were thereafter sufficiently cheered by the sight of patches of healthy grass or pools of drinkable alkali water. These dunes were nearly one hundred feet high and were built upon a foundation of hard black gravel which showed in spots, where the wind had cleared the sand away, revealing petrified cart ruts which must have been made before there was any sand over this part of the country, because it would be impossible now for a cart to make any progress through these shifting mountains. The secret of travelling with camels through such country seemed to consist in avoiding the hollows and keeping to the ridges. The crescent shaped dunes run into each other and all are linked up in an intricate pattern. We followed their curves and progressed from dune to dune for many hours until even the camels were dripping with sweat and the pedestrians who carried their bedding and provisions on their backs were at the point of exhaustion. The only man who remained cool and tireless was my retainer Ting, who kept up a brisk flat-footed pace along the shifting ridges, choosing a path where there were no landmarks and where the wind obliterated in a few minutes all trace of the passage of men and animals. We descended at last into a little valley where there were grass and firm ground and a very thin trickle of water, turned a rocky corner and saw spread out before us a broad valley dotted with sheep and horses—typical Mongol grazing lands. There were a few low huts in sight, the quarters of Chinese shepherds who were trespassing upon the Mongol preserves, but it was not until evening that we again encountered humans.

The Burrs of the Ordos

About sunset we came to a village known as Sung Erh Ko Lang, a forlorn group of shepherds' mud huts. A *li* or so on the other side of it on the top of a sand ridge covered with briars and desert shrubbery, we stopped to rest the camels and I dropped off the beast I was riding and announced that I would walk for a time. I had walked a good deal the previous day, and had done twenty *li* on foot that morning in a pair of heavy riding boots. While I was on the camel my feet felt tired and swollen so I removed the boots and wrapped my feet in a sheepskin coat. While the caravan went on, I sat down on a sand bank, smoked a cigarette and then decided to put on my boots and catch up with the camels. It was exasperating to find that my feet were so badly swollen that I could not get into either boot with or without socks. In the Ordos there grows a little plant about a foot high which in the early autumn bears a rich crop of small burrs nearly as large as a peanut and covered with needle-like spines. The sand of the Ordos is, therefore, full of these hidden sorrows, and anyone who attempts to make progress through it without substantial footgear will find his pilgrimage a constant torment. After the first ten steps I sat down and picked a dozen burrs out of the soles of my feet, then I got up, did another ten steps and repeated the performance. By the time I had gone half-a-mile the charm of the desert was entirely lost upon me, and I did not know but what I should have to continue hopping across the face of the Ordos for the rest of the night. As it was afterwards estimated I actually did about eight *li*, between two and three miles, at the slowest possible pace, before a camel suddenly loomed up before me out of the darkness and a man slid off of it and shouted to me. It was Ting One-eye with my two camels denuded of their packs. The party it seemed, had come to a Mongol well, had built their fires and had then begun to wonder why I did not arrive. Ting made a few scathing comments upon my boots, which he pronounced unfit for wear in such country, and after hoisting me bodily upon the camel he had been leading, he wrapped me up in several big sheepskin coats which he had brought back with him, climbed on the other camel and jogged along towards the camp where we arrived after the others had finished their food and had turned in.

The following morning our start was delayed out of consideration for my condition, and we did not get away until after eight o'clock. We found ourselves in a broad valley in rather sandy country in which a number of small streams running out of sand gulleys into the bigger basin which might once have been a river-bed lost themselves in the dry and porous soil, becoming less instead of greater the further they went. We learned from a horse herd in this valley that the well at which we had stopped the night before was called Paokutou (presumably a Chinese mispronunciation of a Mongol name), that we had tramped ninety *li* the day before and that we were approximately 200 *li* from Paotou. Sixty *li* from our starting point, just as we were emerging from the wide valley into open rolling grass country, we passed a small Mongol temple known as Urustei Miao, according to Ting, where a few aged lamas were in attendance and several hours after dark we came to a well in open country which was known as Taotzekou, where there was a general dispute as to whether we should stop or go on. A biting wind had come up by this time and our pedestrians who were footsore and who were beginning to regret that they had ventured into such desolate country, protested that they had already walked eighty *li* or more and could go no farther. All this while we had been trying to adjust ourselves to a night schedule since camels graze better in the day time. But every night after we had eaten when Ting suggested going on the footsore boatmen who had carried heavy packs on their backs all day, chorussed a vigorous dissent and protested also that we could not leave them when they did not know the road and had been enticed upon this foolhardy journey by promises of consideration. On this night at Taotzekou, Ting therefore announced that he would compromise by sleeping at the well and by getting everybody out in the middle of the night. This he did but the pedestrians were no sooner out of their quilts and sheepskins than they announced their determination in a body to have tea before they started and set about building fires. It was nearly four o'clock before we finally got away and when daylight came we had only covered thirty *li*, most of which I had walked in a pair of bedroom slippers as I still found it impossible to get my boots on. It was decided in general council therefore that there was no use stopping so we went on through monotonous rolling grass land until five o'clock in the afternoon, having stopped for tiffin within sight of the large establishment of the Hanggai Prince, which place is usually marked on maps "Hangking." We had done

seventy *li* that day, the Mongols told us, and a few tent dwellers at the well called Hatatou where we slept, came to our camp and offered to sell us a goat. Our entire party was at once consumed with a ravenous appetite for meat and after an hour's bargaining directed on our part by an old man named Yang, who, at the age of seventy-three, was the briskest walker in our party and the most loquacious entertainer, the goat changed hands for the price of $2.00, and under the manipulation of twenty-six pairs of willing hands was reduced to edible mutton in less than half-an-hour and the Mongol dogs that sat around in an attentive circle got nothing to munch but such entrails as the Mohammedan will not eat, and the marrowless bones. Ting was much disgusted with the time which these culinary operations consumed, for he felt sure that everyone going to bed late and full of mutton would feel disinclined to get up in the middle of the night according to his neglected schedule. Contrary to his dismal prophecy however, everyone turned out readily when he called us a little before midnight.

The start was made shortly after midnight and just after daylight we arrived at a well known as Ulajirim, according to the Chinese pronunciation of it, where Ting announced that we had travelled sixty *li* during the night. We were now in real Mongol grazing country traversed by countless paths made by the sheep and cattle, and by the cart tracks of Mongol fuel collectors. Ting's sense of direction was therefore put to many severe tests during the darkness of the night, for he had nothing besides this acquired talent and the stars to guide him, and I noticed frequently that we were following no trail at all but were simply advancing in a direct line across open grass country upon which there were no land-marks.

The Art of Watering Horses

Upon our arrival at the well we found ourselves in a broad tract of particularly rich grazing country, with herds of cattle, horses, and camels dotted over the plain in all directions. Fifty or sixty horses stood drowsily about a watering trough evidently waiting for someone to draw water for them. Half-a-dozen very handsome stallions kept the most desirable positions for themselves by viciously attacking with hoofs and teeth all that approached them, and occasionally they had a skirmish among themselves which usually resulted in a wild stampede of the whole herd. The mares and colts hung on the outskirts varying the monotony by trotting circles about the well and making feints at the much coveted trough. About two hours after daylight a Mongol woman appeared with a watercask and a willow bucket on a long rope. Her coming attracted several hundred more horses and about a hundred cattle and the fight for positions near the well became more strenuous. The animals were disappointed in this instance, however, for after drawing water for us from a well which none of our ropes could fathom, she filled her cask, strapped it on her back, and set out across country. A little later, however, came an old Mongol with two dogs and a boy, and the watering of the herd began. One of the dogs first cut out all the cattle and drove them on to a little mound where he kept them by circling about the mob and by snapping at them until all the horses were watered. The other dog and the boy then rounded up all the colts and mares and they were driven away to another mound where they could come to no harm, and a furious contest ensued. The old Mongol then began drawing water and pouring it into the trough, and kept it up tirelessly for more than an hour. When the fight among the stallions became too serious he would leap among them and lash them with a rope end, upon which the whole herd would stampede, gallop away to a distance, and stand looking back at him, but as soon as he returned to the well they would wheel about and charge down upon the trough at a mad gallop, fighting and kicking as they came. This was repeated many times until all had had their fill, when the dog that was guarding the mares was called off. With a few short yelps he rounded up the stallions and drove them far out into the grass lands, while the mares and colts timidly approached the drinking place. It now took all the efforts of the small boy and the two dogs to keep the cattle from charging in for they were losing their patience and were snorting and bellowing ominously. When the time came for them to drink, however, they behaved much more decorously than the horses and stood quietly about awaiting their turns.

The members of our party prepared and ate a good meal, and then disposed themselves in the bright sunlight for sleep. A little before noon when everyone was asleep but Ting, who was busy all the while braiding himself a new belt out of eight strands of camel-hair rope, at which camel drivers are all expert, this indefatigable tyrant suddenly rose up with a yawn and announced that we would proceed, kicking the bedclothes off of two or three slumberers to emphasise it. There was a vociferous chorus of dissent, but he prevailed as usual and kept the party going until well after dark that evening when he suddenly sat down beside an alkali pool, pulled off his shoes and announced with a broad grin that he had had enough. Many of the stragglers did not come in until about two hours later, and some of them were really desperately tired and lame. During the day we passed a number of small lakes, and for some time had been trudging through rank grass growing out of soft soil heavily crusted with alkali. At the point where we stopped there were three shallow wells, and the marks of many previous encampments. Plentiful as the water was, it was full of soda and salt, and in the late evening Ting had said that he could see several strings of camels over against the eastern hills, loaded with rock soda. Nobody else saw them, but such was the faith in his superior vision that we took it for granted. About the time that we were ready to sleep, we heard camel bells in the distance, and we debated as to whether there were really camels in the vicinity or whether we were deceived by any other of the weird sounds which one constantly hears in the deserts and grass lands.

Caravans that Pass in the Night

A few minutes later, however, a grey dog of some size trotted in among us and threw himself down before the fire in the most familiar manner, so we knew that a big string was coming. We did not hear the bells again until the camels were almost upon us, but we were warned of their coming by the abrupt departure of the dog who went out to meet them. The next arrival was a man on horseback who also rode into our midst, turned his horse loose without further ceremony, and took a place at the fire. He was at once recognized by a dozen of our party as a Mohammedan camel owner from Huangchichiao, a farming community in the Ninghsia district, where no camels are reared or graze, but which is peculiarly productive of camel owners and drivers.

The string which followed him had been to Hsinning, and was bringing down the first consignment of the Autumn shipment of wool from the Tibetan border. There were 110 camels, 15 men and a dog. Upon the arrival of the dog, Ting had suggested that we gather more fire-wood, and by the time the caravan arrived we were able to make a hospitable showing, and our five copper boilers were bubbling with a fresh brew of tea. The packs were unloaded all about us,

and the dog that had made himself so much at home with us upon his arrival no sooner had property to guard than he became a nuisance, snapping at everyone who ventured away from the fire.

This was the first fully equipped camel train that we had encountered in the desert, and I was interested in seeing them make camp, which they did with perfect system and expedition. Very many had a hand in it and yet there was no confusion. A site was selected, cleared of brush, and swept, a tent went up as if by magic, fuel and water were brought, skins and rugs were strewn about inside the tent, and in a very few minutes 15 men were sitting in a compact circle about a steaming pot inside the tent while the dog lay curled into a muff at the entrance.

After all the others were wrapped up in their bedding and Ting was perfunctorily washing the pots and pans, he announced that we had travelled 110 *li* that day—the route having been over soil that provided very bad walking—that the place of our repose was known as Chaosu, and that he was inclined to let the party sleep a little later than usual unless he waked during the night. I had become so accustomed to being roused unceremoniously at unholy hours that I awoke three or four times during the night with a start expecting to hear the bustle of departure. Each time I got up on my elbow and looked at the pile of quilts and skins which concealed the indomitable Ting, and sank back with a sigh of relief. When I did finally awake it was daylight; the tent with its 15 occupants, the dog and wool bearing camels had all vanished, and the disgruntled pedestrians of our party were sitting up in their quilts yawning with satisfaction after a real sleep.

From this time forward we began to feel that we were nearing our destination. Our course changed somewhat, being now a little west of southwest. We saw many ranges of low hills which are visible from the Yellow River about Shihtsuitze, and our course was crossed by numerous paths and cart tracks made by Mongol travellers and Chinese traders who come back and forth from Shihtsuitze to the camp to Oto Wang which is known as Tungwangyehfu, in contrast with Hsiwangyehfu, the home of the Prince of the Alashan.

The Deep Wells of the Ordos

Thirty *li* from Chaosu we came into a deep hollow filled with wind-cut stones and overlooked by a small monastery. The members of our party amused themselves by dropping pebbles into the two wells that had been dug in the centre of the hollow. Each one had a different system for working out the depth of the well by the time that it took a pebble to reach the water, but a lama settled the dispute by telling us that one was 130 and the other 170 Chinese feet in depth, and that the digging of them had cost nearly 400 taels. I had been on the lookout for these very deep wells in the Ordos, for I had heard many accounts of them, but these were the first which we had seen. Over a great part of the Ordos there are no streams and no large bodies of fresh water, so that while the soil is good and grass grows abundantly, there is no possibility of irrigation and the Mongols are forced to dig deeply to get enough water for their herds.

The country from this point onward afforded more variety of scenery. There were rolling hills with low ranges of mountains in the distance, intersected by sandy stretches and stony hollows, and nearly all of our travellers were able to pick up land marks which they recognized from their experience as boatmen on the Yellow River.

To the west, perhaps 20 or 30 *li* away, there were several round sugar-loaf hills, among which Ting informed me was Hsinchao, a large monastery and settlement, which is one of the few places marked on maps of the Ordos. We had a long rest by the deep wells, and then set out again about noon and travelled in a direct line toward the western end of a range of hills known as Hungshan. An hour after dark it was decided that we could not reach the well which Ting had selected as a stopping place so we determined to turn out of our course and find one of the camping places used by travellers from Shihtsuitze. We travelled three *li* due west along a cart track and quite unexpectedly stumbled upon a well at a place called Nayunggol, which was recognized by a number of our party who had made short expeditions into the Ordos.

From this time forward Ting was no longer sole oracle among us, for many of the boatmen who had made short trips into the grasslands began to orient themselves, and each displayed his limited knowledge of the country by attempting to guide the others to the particular wells or small monasteries which he had at some time visited. Dissension at once arose among us, but Ting contrived, partly by diplomacy and partly by bullying, to keep his little army together for several days more until we came almost in sight of the Yellow River when numbers were no longer of any particular advantage. The weather also turned against us, a high wind came up, and it became bitterly cold, while the sky was overcast and threatening. At Nayinggol the wind scattered our fires so often that we did not succeed in cooking a meal until nearly midnight, and then Ting, who said the weather looked so ominous that we who had no tents could not afford to linger by the wayside, got us up after two hours' sleep and set out again in the face of a driving wind and under heavy clouds. In the morning we came to a sandstone hollow with a well in its centre and with a few shepherds' huts on grass grown hummocks in the neighborhood. The horse-herds of Prince Oto had also cut a number of caves in the sandstone near the well which afforded them shelter in bad weather. This place had once been an important cattle trading centre, frequented by both Mongols and Chinese, and had the Chinese name of Changsanniu-ch'ang, the corral of Chang the 3rd, the latter being a resident of Shihtsuitze.

A Night in the Rain

We had barely finished breakfast here when the wind dropped, and a light flurry of snow settled upon us. This changed almost immediately to a misty rain and after some minutes of indecision, we gathered up our effects and sought refuge in one of the sandstone caves hollowed out by the horse herds. It would have been a very comfortable shelter for a small party, but for 27 of us packed in bag and baggage it was decidedly incommodious. The atmosphere outside was raw and cold, and by the time we had settled ourselves and had exhausted the resources of the Ninghsia dialect in comments upon the weather, it was so warm and close that drowsiness overcame us and we dropped off to sleep as a unit, and slept soundly for perhaps an hour. Someone near the entrance then crawled out and came back to announce that it was raining hard. The prospects for the night were not cheerful. The cave in which we had found shelter would not have provided comfortable sleeping quarters for half-a-dozen of us, while three or four of us at most might have found accommodation in some neighboring shepherds' huts.

Ting, with his usual enterprise, suggested at once that we start out in the rain for a Monastery 30 *li* away at Doloaguei. The only dissenters were the owners of the ponies and donkeys, who elected to remain behind and find shelter in the caves or huts. The rest of us set out in the cold drenching rain, which became heavier towards evening, and tramped on 30 *li* through the long wet grass and slippery alkali flats to a little cluster of one-story houses occupied by a single lama,

a few *li* from the monastery of Doloaguei. Ting and I arrived first with our camels, and the old man who had only a single habitable room agreed cheerfully to accommodate three or four of us on his *k'ang*, and set about building a brushwood fire in a brazier. Two or three others arrived a few minutes later and were also welcomed, and the old lama was just making us comfortable and helping us hang our water-soaked clothing about the room when the whole water-logged army trudged in, numb with cold, and, despite the lama's protests, insisted upon crowding about the fire. It was physically impossible to turn them out, so another unfurnished room was opened up, and all but a few of us were invited to camp on the floor. Five of us slept on the lama's *k'ang* that night, which had been designed for his sole accommodation, while five others found accommodation on the floor of his little room. Eleven others occupied the floor of the other room. All slept in wet bedding, and as there was not sufficient fire in either room to dry the clothing, no change of garments was possible. Those of us who reposed on the hot *k'ang* were able to keep warm, but all the others got so cold shortly after midnight that by mutual agreement they dressed, repacked their effects, and trudged on through the night rain to a larger and more commodious monastery.

After daylight Ting and I and a camel driver named Ka-tze, who was always with us, were able to dry our clothes and to make a little tea, after which we set out through a thick fog and travelled 25 *li* to a well called Tsabawo, where the other travellers had stopped and were drying all of their belongings on ropes and poles. That night just after dark, we crossed a stream of water and came to a shepherds' village, half Chinese and half Mongol, known as Gumburdo. We passed through the village and camped about the well, that is three of us did, for nearly all the others were now in country familiar to them and went on to whatever stopping place appealed to their particular whims or fancies. I went to bed that night with a cold and a fever as the result of drenching and exposure but got awake in the morning feeling thoroughly recovered, to find two inches of snow on top of me. A circle of Mongol dogs squatted on their haunches about the camp, made friendly overtures while we were preparing breakfast, but became very hostile when we tried to approach the village for water. The camels had found little grass in the neighborhood, and had strayed a long way off so that by the time they were recovered, and breakfast had been disposed of, it was late in the morning.

Fertile Country Once Again

After we had gone a few *li* we crossed an eminence upon which stood a mud watch-tower, and had a glimpse of the Yellow River, of the agricultural country on its west bank, and of the Alashan mountains behind it. Following the path which descended towards the river through an intricate network of gulleys, we came out into flat meadow land, over all of which the grass grew nearly as high as a camel, and forced our way through to the bank of the river.

We were here about 80 *li* south of Shihtsuitze, and about 120 *li* north of Ninghsia. A number of ferry boats usually crossed and recrossed at this point, which is known as Hungpatze (the red cliffs), but we had to travel fully ten *li* along the river bank before we came to one which was already heavily loaded with soda. After much persuasion we were allowed to put the camels on board, and in a very few minutes had gained the opposite shore and were making our way through cultivated fields and over irrigation ditches.

The river here is the only barrier between the desert and the very fertile agricultural country on the Ninghsia side. The high plateau country on the east of the river is extremely desolate, more barren than much of the Ordos proper, too high for irrigation, and too poor in grass to afford much grazing. But on the west side of the river in the belt of flat land which extends westward to the Alashan mountains, the country has been irrigated by an elaborate system of ditches for a thousand years or more and is highly cultivated and fertile. At Shihtsuitze, 80 *li* north of the point at which we crossed, a spur of the Alashan runs down to the river bank and with the desolate bluffs opposite forms a gorge which marks the northern limit of all agricultural effort, but not of all agricultural possibilities, for at many places along the course of the river between Shihtsuitze and Paotu there are hundreds of square miles of flat country well grown in grass which could be readily irrigated and planted.

The three of us, Ting, Ka-tze and I, were the only ones of our party who contrived to cross that day, for as we learned later the others had gone to a ferry further down stream which was not then operating and did not manage to make a crossing until the following morning. A few *li* from the bank we passed through Ka-tze's village, where he left us, and went on another five or six *li* to a farmhouse in the community of Lingshuipi, which Ting entered with an air of familiarity, and, after unloading the camels, described as his home. From the camel driver he was at once converted into the host, and having rounded up his father and mother, his brother's wife and child, and having introduced them all, the whole household set to work to make the "distinguished visitor" as comfortable as their very cramped and limited quarters and their still more limited means permitted.

The Ting family was very poor but I was received with the dignity and grace which characterizes honest agricultural folk the world over, and no apology was made for poor quarters or coarse food. The homestead was a mud hovel of four small rooms without windows and with rickety doors made up largely of cracks and patches. There was also a little detached shed on which a donkey and on ox were housed. The four dingy rooms sheltered the elder Tings, man and wife, my servant, the one-eyed Ting and his brother and five children. Two dogs and a cat were the dependents. Old mother Ting was very much a tattered wreck and was kept out of sight, while Ting senior, who had been a big man like his son, but who in his 72nd year was broken down by rheumatism and insomnia, told me that life was a burden and that he longed for release from it. I was assigned a place on the old man's *k'ang* and had heard the whole story of his ailments and troubles within ten minutes of my arrival. By some fortunate turn of the conversation, it came out after a time that he had been a muleteer with the conquering army of Tso Tsung-tang and had followed the victorous Hunanese as far as Hami in the conquest of Turkestan. Having learned this much, I enticed the old man to tell stories. As he warmed to his subject, his querulous tone disappeared and for the rest of the evening he proved himself a first rate raconteur I spent the next day with the Ting family and contrived to learn a great deal about their mode of life and their devices for making ends meet. It occurred to me then that though I had travelled many thousand miles in China, I had never before been the guest in a plebeian Chinese household and had had no opportunity of becoming familiar with the life of a people who make up the vast majority of China's population. I think too that this is true of most foreigners and if my life among the Tings is any criterion, I believe that a more intimate knowledge of people of their class would give us a more sympathetic understanding of the Chinese and a fuller appreciation of their inherent good qualities which are so often held in abeyance by the hard economic conditions under which they live. The Ting brothers cultivated a little over eight acres of land. Part of the produce from this was set apart for the old people and in the balance the brothers shared equally. Enough grain was set aside in big earthenware

jars for winter provision and the trifling balance was sold to buy clothes. Both brothers were camel drivers in the winter and it was by virtue of their earnings abroad that the family subsisted, rather than upon the meagre produce of their land which was poorly irrigated and was everywhere white with soda.

Ninghsia is in the centre of a strip of irrigated land lying between the Yellow River and the Alashan mountains, which is nowhere more than twenty miles wide, and which is possibly 170 miles from north to south. The mountain range, while it is rugged and magnificent and provides a splendid contrast with the green lowlands along the river's bank, supplies little or no water to the farmers and as the rainfall is insufficient, the crops are dependent upon the irrigation ditches which bring water from the Yellow River into the farming country and carry it back into the river again. There is one long canal which runs past Ninghsia and which parallels the river throughout almost the whole length of the agricultural country. These irrigation canals are certainly very ancient and their maintenance is a heavy expense to the country for the silt from the Yellow River fills them up rapidly and every farmer is required to work so many days a year for each thirty *mow* of land that he cultivates, at excavating in the canals, or to pay subsidies at the rate of forty coppers a day for it. Thanks to the water supply thus provided, the Ninghsia district produces rice which is grown in very few places in the northwest of China, and also great quantities of hemp shipped for the most part to Paotou and thence to the coast. The large production of wool in the hills on both sides of the Yellow River affords work for many camels and in some of the Mohammedan communities, notably in Huangchichiao, nearly every farmer is a camel driver in winter and all those who prosper invest their surplus profits in camels.

Ninghsia is famous in China for the carpets produced there but while small carpets of a very fine texture are manufactured, the larger rugs are usually of no better quality than those manufactured at the coast and do not seem to be much cheaper. Marco Polo in his account of Ninghsia, says that the place was famous for a fabric manufactured from camel's hair, in which the wool of white camels was much used. On my several visits to Ninghsia I made inquiries about this material but have not been able to learn that it is still manufactured. The white camels do, however, exist. There are probably some white camels in every camel breeding community in Tartary, but the percentage of white camels in the Alashan district is certainly higher than in any other which I have visited, and as they are usually very tall and powerful, one is lead to believe that originally they were probably a separate breed which the natives have not taken the trouble to keep distinct. Ninghsia is better known to Chinese at the coast for a kind of sheepskin used in lining the clothes of the wealthy and ultra-fashionable, known as *t'an p'i*. The wool on this skin is in long, silky spirals, peculiarly fine and soft and the skin itself is remarkably thin and light. It is now very rare, even in Ninghsia, and commands very high prices.

The Ting farm was about seven *li* from the main road between Shihtsuitze and Ninghsia. It would have been out of our way to have travelled by it so we took the river road which runs all the way through Mohammedan villages a few *li* from the riverbank, in which boat building seems to be the sole industry. We set out on the morning of October 31, and after struggling through a maze of irrigation ditches both great and small for seventy painfully long *li*, we arrived after dark at the Mohammedan community of Chingshuipu. We took it for granted that there would be some accommodation for travellers there but found that there was no inn and as it was already dark, we were just beginning to worry when Ting remembered that one of our fellow travellers across the Ordos, an old man named Yang, owner of the two donkeys in our caravan, lived in Chingshuipo so we made diligent search for his house and finally found it about a quarter of a mile from the walled village. We were received by the entire family, and it was a very large one, with a noisy welcome and were ushered into a big living room well heated with a brass brazier and provided with a huge *k'ang* upon which 11 of us slept that night very comfortably. The Yangs, like the Tings, were farmers but they were farmers on a very different scale. We had no sooner made ourselves comfortable on the *k'ang* than food began to appear in great abundance and great variety and it kept on coming as long as anyone was awake to eat it. A horde of grandchildren, clean, good-looking and rather well dressed, lined up along the *k'ang* and stared at the visitor for several hours, while old grandfather Yang, who was very garrulous and quite a wit in his way, poured tea for me and lectured his progeny for several hours upon the habits, mannerisms and peculiar virtues of the stranger within their gates. He had business in Ninghsia, so the following morning he set out with us mounted on his donkey, and travelled with us the remaining fifty *li* to the city.

Rolling Stock on China's Railways

On the fourteen railways owned and operated by the Chinese Government there were in 1918 a total of 653 locomotives (including 22 composite locos.), as compared with 648 in 1917, 638 in 1916, and 629 in 1915. Of these 204 were passenger locos.; 320 goods locos.; and 129 shunting locos. There were 3.7 passenger locos per kilometre of line; 5.8 goods locos, and 2.3 shunting locos. The total tractive capacity of the passenger locomotives was 1,954.444 metric tons, while that of the goods locomotives was 3,239.984 metric tons, and the shunting locos 835.519 metric tons.

The number of goods wagons on the Chinese Government railways at the end of December, 1913, totalled 10,748, being an increase of 89 over the number reported for the same date in 1917. The Tientsin-Pukow railway acquired practically permanent use of 50 open and 150 covered wagons with the capacity of 30 tons each, but omitting this 6,000 tons and all other leased equipment, the capacity owned at the end of 1918 was 243,065 tons. Covered wagons have an average capacity of 23.8 tons, and open wagons 22.5 tons. Carriages totalled 1,231 with a carrying capacity of 61,794 passengers. This number of cars includes 12 dining cars, and 26 postal vans. The seating capacity of carriages is greater as the class is lower. The 1st class average about 32, the 2nd class 54, and the 3rd class 75 passengers. The value of the higher class carriages is greater and the weight fully as much as the lower class. The best performance per seat is 133 kilometres per day. The average performance is 103 kilometres per day.

Reports from America state that Japan has agreed to withdraw the demand made that Mongolia and Manchuria should be excluded from the operations of the new Consortium. Provided that the Powers will respect all Japanese financial, economical and political privileges and rights in Manchuria which have been obtained from the Chinese Government previous to the organization of the new Consortium. Reports from Harbin also state that the provincial assemblies and Chambers of Commerce of the Three Eastern provinces also desire that the demand of Japan for exclusion should not be complied with. They propose to hold a conference at Changchun "to oppose the Japanese demand by every means at their disposal." If it is true that Japan has herself cancelled the demand, then everybody should be happy.

Engineering, Financial, Industrial and Commercial News

RAILWAYS

Railway Improvements in Japan.—The Japanese Railway Board intends to lay six tracks between Tokyo and Yokohama and between Osaka and Kobe, adding a double-track to the quadruple line previously decided on. The Board's purposes for this scheme are, (1) the sole use of the inside double track for the express train service; (2) the use of the second line for passenger trains of the slow or local services; and (3) the third double track will be for goods trains. The lines themselves are the smallest part of the undertaking involved, and if an eventual sixfold track is decided upon it is to be presumed that the viaduct will be constructed of that width from the beginning.

The section of the newly built railway between Fengcheng and Pingtichien on the Peking-Suiyuan line has been opened for traffic. This extension was dealt with in the FAR EASTERN REVIEW of November 1919.

Japan's Railway Estimates.—The estimates for the Japanese Government Railways for the coming year show an increase of some Y.45,000,000 in wages and Y.25,000,000 in the cost of materials, especially coal. These circumstances have forced the Government Railways to introduce a change in the rates for passenger service on all rail lines and freight charges on some steamship lines, the new rates to be effective on and after February 1st, 1920.

Extensions in Philippines.—The Manila Railroad Company is planning an extension of the northern line of the road as far as Aparri, Cagayan, which is the northernmost province of the Island of Luzon. The extension will begin at Cabanatuan, Nueva Ecija, passing through the northern provinces on nearly a straight line and ending at Apparri, which is the largest seaport in the Province of Cagayan. At present the Cagayan Valley, the greatest tobacco producing region in the Philippines, is without direct communication by land with the rest of Luzon. When the proposed extension of the railroad becomes a reality, however, the Cagayan valley will be brought into direct daily contact with Manila and the other cities and Provinces on the Island of Luzon.

TRAMWAYS

Canton Tramway.—According to the "Canton Times" the Canton Municipality has addressed a letter to the Kwangtung Tramway Company, requesting that the balance of the first instalment of $200,000 which has been overdue be paid up to the Municipality at once. It is learned that up-to-date only $140,000 have been paid by the Tramway Company, leaving an overdue balance of $60,000. The second instalment of $200,000 is also due. For the concession the Tramway Company will have to pay $1,000,000 in five separate instalments. The money received by the Municipality from this source is devoted to the construction of new streets which are being rapidly completed.

In response to a petition from certain Canton gentry the Prime Minister at Peking has telegraphed to the directors of the Canton military government demanding the cancellation of the concession granted by the Canton Municipal Council to certain British merchants for the construction of a tramway in Canton City. The petitioners make the allegation that for the payment of a sum of $1,000,000 by instalment, that is, $50,000 each year, they have been granted the tramway monopoly for twenty years. They also state that of the merchants to whom the contract has been granted two are British subjects and one is a Chinese naturalized as a British subject. This means, according to the petitioners, that should any trouble arise in connection with the concession the Government would have to submit to the decision of the British court of Hongkong. They also declare that whenever there is trouble the British will certainly land troops to protect the tramway. On account of these allegations the Premier has demanded that the Canton Government cancel the contract.

The Nagasaki Tramways.—The Nagasaki Electric Tramway Company's new line from Sakuramachi to Furumachi will be opened during February when it is proposed that the fares on the entire system be doubled.

MOTORS

A New Motor Boat Co. in Canton.—Generals Li Fook-lum and Ngai Bong-ping, Mr. Chan Limpak and others have raised $100,000 for the organization of the Chu Kiang Motor Boat Company in Honam, Canton. Several motor boats have been built. It is said that General Ngai Bong-ping has ordered a motor boat to run more than thirty miles an hour.

Canton has Ten Automobiles.—According to the count taken by the police department regarding the number of motor cars and motor cycles now in use in Canton, there are at present ten motor cars of various make, one small toy motor car, and fourteen motor cycles. Of the ten automobiles, the Military Government owns three, General Li Lieh-chun three, Tuchun Mr. Ying-hsin two, General Ma Chi and Commissioner of Finance Yang Wing-tai one each.

Motor Buses at Hongkong.—Hongkong has now a service of motorbuses which run from Victoria City along the new road to the rear of the Island. There are five buses, three of which are designed for fifteen passengers and two for twenty-one. They are built on 32 h.p. Overland motors, fitted with Torbinson final drive. They are arranged on the charabanc style and ample protection against weather is provided.

Motor Boats Coming Into Favor.—Generals Li Fook-lum, Ngai Bong-ping, Mr. Chan Lim-pak and some others have raised a capital of $100,000 for the organization of the Chu Kiang Motor Boats Company in Honam, Canton. Several motor boats have been built. It is said that General Ngai Bong-ping has ordered a motor boat which may run more than thirty miles an hour. It will be launched very soon.

ROADS

From Canton to Whampoa.—It is reported that Mr. Tsen Chun hsuan has given instructions to have plans drawn up for the construction of a highway from Canton to Whampoa, the road to be two hundred feet wide. In connection with the building of this road there is again much talk of developing Whampoa into a seaport capable of accommodating ocean-going steamers.

The construction work of the first and second sections of the automobile road from Sunwei to Hokshan in Kwangtung Province has been completely finished and the third, fourth and fifth sections are now being built. It is expected that the whole road will be finished by March.

New Road in South China.—The construction work of the proposed automobile road between Fatshan and Chenchuen, Kwangtung Province, China, will be commenced within the next two months and the expenses will be wholly defrayed by the Canton-Hankow Railroad Company. It is alleged that a railroad will also probably be built, if the communications between the two points demand it. The export and import trade as well as the money transactions between these two places are now under investigation.

SHIPPING

New Pacific Project.—It is reported that a new shipping line is being promoted to operate steamers between Japan and Chile. The capital to be two or three million yen.

A New River Company.—It is reported that an American river company is being formed for the purpose of operating a line of vessels on the Yangtze between Shanghai, Hankow and Chungking. The vessels operated by this company will fly the American flag, and it is expected that the first vessel will be placed on the river trade at the end of February.

INDUSTRIAL

Hing Wah Paste Co. Expanding.—The Hing Wah Paste Manufacturing Co., Ltd., proposes to extend its business in North China. Plans are in hand for the erection of a new flour factory in Shanghai, says the Hongkong "Daily Press." Mr. Sin Nai-lun, the chief manager and director of the company, has recently returned from a visit to Shanghai after arranging for the opening of three branches, (1) in Shanghai for handling business in the provinces along the lower stream of the Yangtzekiang, (2) in Hankow for operations in the provinces along the upper stream of the Yangtzekiang, and (3) in Tientsin for tapping the provinces in the North, the Three Eastern Provinces, Manchuria and Mongolia.

Cotton Mill Project.—A big cotton mill owner, Mr. Cheng Fook-tung, of Haiphong, is planning to visit Canton and start a cotton mill there. Mr. Cheng at present operates three cotton mills in French Indo-China.

Match Factory for Kwangtung.—A proposition is afoot to establish a match factory at Chaochow, in Kwangtung province, with a view to encouraging native products. The capital is to be $100,000.

Arsenal at Antung.—The Japanese are reported to have established an arsenal at Antung.

Converting Ramie into China Grass.—A new machine, of novel construction, says the "Indian and Eastern Engineer," has just been invented in England for producing economically, and in large quantity daily, from ramie, an uninjured fibre, like the hand-cleaned China grass produced in China. It will be easy to operate, no skilled labor being necessary, cheap for the planter to purchase, and is especially made to stand prolonged work on plantations without getting out of working order or its parts breaking.

Shanghai Dock and Engineering Co.—The Directors of the Shanghai Dock & Engineering Co., Ld. have decided to pay an interim dividend of Tls. 5 per share on February 4.

Industrial Development in South China.—The acting Civil Governor of Kwangtung Province is anxious to see local industries promoted in the different districts of this Province. He has authorized all the district Magistrates to organize within three months a bureau for the promotion of local industries in their districts. In districts where no funds are available for the work the Canton Government will subsidise the maintenance of the district bureau.

Factory Congestion in Bombay.—Overcrowding in Bombay to-day is much as it was in Manchester fifty years ago. The city, itself on an island of only 22.35 square miles in area, says a writer in "Capital," Calcutta, has 83 cotton mills not to speak of the many saw mills, dock-yards, engineering plants and other factories. The industrial population has grown out of all proportion to the housing possibilities, resulting, as in any large city, in land speculation on the one hand and demoralization of the workers on the other. As the great latent power of the western ghats for producing electricity is developed it is evident that new mills will gradually spring up on the mainland where space is not limited and transportation problems are rendered easy by railway or motor lorry. If adequate plans are laid now for such an industrial development we may confidently look forward to a new Bombay entirely free from cotton mills. Abundant examples of such development are to be found in the past two decades in many English cities. It is to be hoped that the municipality will accompany their industrial changes with adequate modern housing provisions, which will obviate a repetition of Bombay's slums.

Projected Distillery.—Machinery for a new distillery plant on its way to Shanghai was intercepted in its mission by the grounding of the s.s. *China* at Nagasaki in January. The machinery was the property of Mr. Wallace Rosenblat, one of the famous "seven brothers."

A New Japanese Company.—A concern called the Shantung Industrial Company is to be established with a capital of Yen 10,000,000 to operate in Shantung. A large tract of land in Tsingtau has already been purchased by the company.

New Sugar Central.—A big sugar central is to be built on the extensive sugar estates of the Yulo brothers, at Binalbagan, Occidental Negros, Philippine Islands, sometime this year.

Industrial Development of Kwangtung.—The acting civil governor of Canton at a New Year reception inaugurated a discussion of the ways and means for the promotion and development of native industries in Kwangtung. He said the time had arrived to stimulate industrial development and it was his desire to bring about more co-operation between capitalists, business men, and modern educated technical experts in the starting of new native industries and the carrying on of private enterprise. It was announced by the head of the Industrial Promotion Bureau that an Advisory Board composed of returned students and others who are experts in different lines of industrial activity will shortly be formed for consultation and investigation.

Reports from Canton state that the Star Leather Company, which was organized in the summer of 1918, with a capital $100,000 by some graduates of American Universities is continuing in full operation the factory being near one of the tributaries of the Pearl River in Pak-Hoh-Choh, Honam, Canton. The factory is equipped with up-to-date American machinery and is being managed on modern lines. The factory produces about five hundred sq. ft. of upper leather per day, the best grade of which is sold at Canton for 64 cents a foot and the poorest at 42 cents. The leather is said to be cheaper than the foreign by 50 cents a sq. ft. The product is somewhat coarser than imported leather owing to the poorer quality of local hides.

Projected Camphor Industry for Philippines.—A new industry, the growing and manufacture of camphor, may soon be established in the Philippines if negotiations now pending toward this end succeed, says the "Philippine Free Press." The local representative of the E. I. du Pont de Nemours and company, of Wilmington, New York, wholesale consumers of camphor in the manufacture of pyralin and celluloid, has written a letter to the secretary of agriculture and natural resources, through the director of forestry, asking for information as to the possibility of obtaining from 5.000 to 10.000 acres of land suitable for the growing of camphor. Director Fischer, in his letter transmitting the company's query to the secretary of agriculture and natural resources, strongly recommends that the government either sell or lease to the company some 20.000 acres of land in the Mountain province where, Director Fisher says, camphor trees grow very well indeed, according to experiments already conducted by the bureau of forestry.

AVIATION

Private Plane for Shanghai.—Shanghai's first privately owned aeroplane, ordered in England by Major William R. McBain, is due to arrive in Shanghai shortly. Major McBain has not only bought the machine, a large two-seater of the Armstrong-Whitworth make, but has laid out his own private landing field at Hungjao and erected a hanger suitable for housing it when it arrives.

Protest against Aeroplane Loan.—The French Minister has lodged a protest with the Chinese Ministry of Foreign Affairs against the Vickers' Aeroplane Loan on the ground that in the 3rd year of the Republic an understanding was reached between China and France that if China should buy or repair flying machines France had the preferential right to undertake such supply and repair for ten years, and that if China should make any loan in which flying machines were involved France should first be consulted.

Aero-Club of Shanghai.—A new Aero-Club called the Aero-Club of Shanghai has been formed in this city. The purpose of the Club is to advance aviation in all its lines. Shanghai is said to be on the main line on both ways of the "Round the World Trip."

Commercial Aviation in the P. I.—The first delivery of commercial goods by seaplane in the Philippines was made by W. N. Bartholomew of Erlanger and Galinger, who carried over a Victor victrola to Captain A. Hill at Cavite on a Curtiss seaplane early in January.

ELECTRICAL ENTERPRISES

China's Wireless Telephones.—Remarkable results were obtained at the official tests of the Marconi wireless telephones which are guaranteed to operate for 40 miles. The trials were carried out between Peking and Langfang. Reuter's Peking Correspondent reports that a more powerful current interfered with the experiments and the operators, concluding that the Japanese were interfering, sent a message to the Japanese wireless station explaining the circumstances and asking them to hold off No reply was received but the current which was cutting in grew stronger. The trials were then delayed. Subsequently the best results were obtained proving the power and efficiency of the machines in the most remarkable manner. A ship at sea, recognizing the wireless telephones, though it was the first time that they had been used in the Far East, asked who was using wireless telephones. The operators explained, satisfying the seamen's curiosity. These instruments were illustrated and described in the FAR EASTERN REVIEW of December, 1919.

Project for Shatau.—A capital of $20,000 has been raised to organize the Lee On Company in Shatau, Namhoi district, Kwangtung Province, by Ho Yim-tong and other merchants there for the purpose of starting an electric light plant in that town. Applications have been despatched to the Canton Administration for consideration.

Some of the wealthy Chinese in Suchian, Kiangsu, are endeavoring to arrange to install an electric light equipment. They also have plans to buy motor trucks to convey goods to Hsuchowfu, which is connected with the Tientsin-Pukow and Lung-hai railways.

Plant Closed at Ichang.—A correspondent writing from Ichang, Hupeh province, calls attention to the inadequacy of the Chinese with regard to the management of the Ichang Electric Light Company. He says the Company seems to have fallen upon evil days as it has not supplied light for about two weeks, with little prospect of operations being resumed in the near future.

Inadequate Telephone System in Canton.—The inefficiency of service and inadequacy of equipment which have long been felt in connection with the Canton telephone system are the points of attack in plans for improvement now in progress. Heretofore there have been four distinct public telephone stations—Main, West, East and South, handling 700, 800, 400. and 300 telephones respectively—and three private stations—the Military Governor's with 100 telephones, the Civil Governor's with 50, and the Police Commissioner's with 100. Antiquated equipment, poor construction, and untrained operators have added to the doubtlessly justifiable dissatisfaction. Concentration into one central exchange with new equipment which is now planned will give much needed relief.

Electrical Developments in India.—Two officials of the Government have been appointed to make a survey of available waterpower in India, and are making progress in their report, which, when ready, should lead to a tremendous growth of electrical industries in India. Although long a predominantly agricultural country, India has vast industrial possibilities, and capital will not be lacking to develop them when the problem of power is solved. From a report of Mr. Meares we read that "the actual capital represented by the Electric Supply and Traction Federation of India is stated to be about 14 crores (about G.$47,000,000).

Suan Mine Power Plant.—The continually growing demand for an increased supply of power makes it necessary for the Seoul Mining Company, Korea, to again look into the hydro-electric possibilities in the neighborhood, or to consider an increase in the capacity of their power plant. The whole of the power used on the Suan Concession is supplied from the Company's power plant situated on the main river and close to the railway station at Pyeng Yang, some 55 miles from the mines. During the year the supply of electricity was well maintained and the plant was in full operation for 98.57 per cent. of the total time as compared with 98.3 per cent. in the previous year. The usual annual Government examination of the plant resulted in a most favorable report being made. Owing to the price of coal having been raised from $3.52 per ton to $7.82 per ton in June, 1918, the power cost shows a heavy increase, being $0.0174 per KWH for the year as compared with $0.01175 per KWH for 1917.

MINING

Kailan Dividend.—The Chinese Engineering and Mining Company, Limited, made a profit of £793,846 during the year ended June 30, 1919. A dividend of 20 per cent. was paid. About £300,000 was required to pay excess profits duty. The balance carried forward was put down at £293,846.

Philippine Dredges.—This company was formed in Melbourne in 1912 to acquire alluvial gold ground on the Paracale river, Luzon, Philippine Islands. The company also owns a majority of the shares of the Paracale Bucket Dredging Co., operating ground adjoining. John McWhee is chairman, and William Telford is manager. The report for the year ended October 31, 1918, shows that the two dredges of the Philippine Dredges Co. treated 527,606 yards and 490,376 yards, winning 4,894 oz. and 2,112 oz. respectively. The two dredges of the Paracale Co. treated 259,373 yards and 555,287 yards, winning 1,40[illegible] oz. and 3,961 oz. respectively. The profits from the company's dredges were £7,705 and the dividends received from the Paracale Co. were £[illegible],853. After the payment of administration and other expenses, the divisible profit was £4,183. Dividends absorbed £8,730, or 5 per cent., being partly paid out of the profits brought forward from the previous year. Operations were greatly impeded by inability to effect repairs, and since the close of the year under review one of the Philippine Co.'s dredges and one of the Paracale Co.'s dredges have suspended operations until necessary repairs are made.

Yunnan Mining Development.—General Tang Chi-yao, Military Governor of Yunnan, has sent two of his staff, Yeh Shau-yu and Tseng I-nan, to proceed to the South Seas, in order to urge the wealthy Oversea Chinese merchants there to return and operate the mines.

The Chaitang Mines.—Lu Tia-yuan, Provincial Chief of Anhwei province, has been appointed Director-General of the Chai-tang Coal Mining Industry.

Huan Mining Agreement.—It is reported that General Chang Chin-yao, Military Governor of Hunan province, has, under much pressure, cancelled the mining agreement which he made for the development of mines in Hunan, and which was published in the FAR EASTERN REVIEW of December.

Shansi Mining Development.—A report that the Peking Government has granted extensive mining rights in Shansi province to foreigners caused strong opposition to be voiced by certain natives of the province. Their activities caused the Peking Government to issue a denial. The protests have nothing to do with the arrangement recently made by the Governor of Shansi province with the Kailan Mining Administration for the development of the coal resources near Tatung. That arrangement was made by the government of Shansi and is approved by the people of the province.

CONSTRUCTION

The Canton Municipality proposes to rebuild the dangerously steep and narrow concrete bridges which exist occasionally on The Bund, and to fill up the filthy creeks.

Engineering School.—The members of the Mechanics Institute of Honam, Canton, are building a new home in which they intend to establish an industrial and engineering school. It is intended to put up a building which, when fully carried out, will cost $120,000.

New Trading Port.—As Sun-ting of Nan-chong village is said to be the chief traffic centre of Hokshan and Sunwei districts, Kwangtung, and is also situated exactly between the borders of the two districts, the shareholders of the proposed Sunwei and Hokshan railroad company in Hongkong have recently proposed to open a trading port there. They have sent Chung Kai-kee there to supervise the construction.

Magnificent Office Building for Manila.—Eliseo Sendres, representing the Bank of Philippine Islands; H. B. Pond, representing the Pacific Commercial Company; Antonio Melian, representing the Hogar Filipino; and Gregorio Araneta and Senator Vicente Singson Encarnacion have agreed to build jointly an office building on the block bounded by Plaza Moraga, Plaza Cervantes, Calle Juan Luna, and Muelle de la Industria. This new building which will cost several million pesos, will be one of the best office buildings in the Orient. The offices will be "air cooled" and in other ways will represent the last word in present-day comforts and conveniences in such structures.

Proposed Work on the Tientsin River.—Engineers have made a survey along the shore at Taku for the purpose of conserving the Tientsin River. The result shows that if the sand beach is dredged, and the coast embanked ten vessels each having a draft of 20-ft. could pass into the harbor at the same time. This will save $150,000 needed for the purpose of repairing the collapsed bank of Taku.

The New Port for Tientsin.—The "Peking Daily News" states that on account of certain opposition to the project to develop a new port for Tientsin as described in the January issue of THE FAR EASTERN REVIEW, the Ministry of Agriculture and Commerce is hesitating in the issue of a permit.

Improving Wuchow.—A movement is afoot to extend the northern boundary of Wuchow and build there a modern settlement. The cost is estimated at 3½ millions. It is estimated that about 2 million dollars will be required to construct the bund.

Improving Canton.—The Canton Municipality, finding that the Bund from the East Bridge to the Canton-Kowloon Railway Station is only forty feet wide, has decided to widen it to seventy. It has also been decided that from the Canton-Kowloon Railway Station to Tungchuen Maloo, it will be one hundred and fifty feet wide. This section of the road will be 1,455 feet long, according to a circulation agency news report.

Y.W.C.A. Building for Canton.—The Y.W.C.A has purchased a piece of land of about 240 *chengs* in Tai Lee Hong inside Canton city, for the construction of a new building to cost more than $20,000.

Art Gallery for Osaka.—Plans for erecting a large art gallery in Osaka at a cost of Y.1,000,000 are maturing. This project is endorsed by prominent citizens there who have already promised substantial donations either by cash or by art objects. The city office has set aside Y.8,900 with a view of making investigation before the plan is carried out. The city will soon ask bids from the local architects for plans of the new gallery.

Mint for Shanghai.—Reuter's Peking correspondent says it is understood that the Government has decided to establish the head mint of China in Chinese territory at Shanghai close to the International Settlement, under the direct control of the Currency Commission, which has appointed a committee of eight to purchase the ground and make the other necessary arrangements. The mint will be of enormous capacity and fitted with the latest appliances. Engravers and other foreign technical assistants will be engaged and the methods employed will be the most up-to-date. Banks sending silver to be minted will know the exact amount of coinage and the time when the coins may be received, the mint will merely charge seignorage and will not otherwise concern itself with the question of market values. It is estimated that the mint will turn out dollars in a year's time.

Housing Difficulty in the Straits.—Plans are under way in Kuala Lumpur, Straits Settlements, for the formation of the European Co-operative Building Society whose object will be to develop a section of Kula Lumpur that shall be set apart as a residential reserve. At a public meeting last month a committee was appointed to draft a plan for organization, and to approach the Government for terms under which land would be leased.

FINANCIAL

Money for Chinese Government.—A sum of $800,000 forming a part of the Customs Surplus Fund for December was released by the Diplomatic Corps to the Chinese Government on January 6.

Hongkong and Shanghai Bank Dividend.—The Hongkong and Shanghai Banking Corporation will declare a Final Dividend for the year which will probably be £2.5 per share with a bonus in addition of £3.10.4, subject to deduction of income-tax. There will be added to Silver Reserve, $2,000,000, a sum of $1,000,000 will be written off Bank Premises Account, and $3,250,000 will be carried forward to next year. The annual general meeting of shareholders will be held on Saturday, February 28.

Asia Bank and the Italian Loan.—Subscriptions to the sixth Consolidated Italian Government five per cent. loan are now being received at the Asia Banking Corporation. Bonds are in denominations of Lire 100 and the issuing price is Lire 87.50 plus interest from January 1 to the date of payment.

A bond of Lire 100 may be purchased for about Mex. $6.75. One hundred Shanghai taels will purchase about Lire 2,000 in bonds at the present exchange. At par the lira is equal in value to a franc and is worth about 10d. in English or 20 cents in American currency. Thus in normal times the Lire 2,000 equals G.$500 or £80. Arrangements have been made by the Asia Banking Corporation to allow subscribers 10 months in which to make payments.

Is China Poor?—The Government proposes to make a donation of $100,000 in Government banknotes (which in reality is about $50,000), to the relatives of the late acting-President Feng Kuo-chang, to defray his funeral expenses. General Feng died quite recently and is reported to have left an estate valued at $23,000,000!

Customs Receipts at Tientsin.—The receipts of the Tientsin Chinese (Native) Customs for 1919 are reported to amount to Tls. 5,000,000, a figure considered highly satisfactory by the officials.

New Sino-Japanese Bank.—The scheme of establishing an American-Japanese bank promoted by President Inouye of the Bank of Japan and Baron Shibusawa will be brought into trangible shape shortly.

Philippine Chinese Organize Big Bank.—Three million gold dollars towards the formation of a new Chinese bank was subscribed by Chinese in Manila in less than two hours and it is now intended to capitalise the new institution at P.20,000,000, with the expectation that the remaining 14,000,000 will be raised without difficulty. The money was pledged at a meeting of the Manila Chinese Chamber of Commerce. Uy Yet-chu, sugar producer of Java, subscribed P.1,000,000. The remainder was promised by 20 others. It is proposed to incorporate the bank under the laws of the Philippines to be operated entirely by Chinese for the benefit, for the most part, of Chinese. Its business will probably not be confined to the Philippines but will branch out to various places in the East. It is believed that the entire capital will be subscribed at the next meeting of the Manila Chinese Chamber of Commerce.

Sinkiang and Loan.—The Peking Government has received a telegram from General Yang Tseng-hsin strongly urging it to refrain from negotiating foreign loans which, he holds, have been calamitous in the past. He has used his influence to oppose such loans wherever possible, notably when President Yuan Shih-kai cancelled the proposal of a $5,000,000 loan from Russia on the security of Sinkiang mines, and also when a loan of $1,000,000 on the security of the cattle tax was proposed for developing industry. General Yang Tseng-hsin disclaims all connection with the report that an attempt was made by a Government official to borrow money from Japan to be secured by all the mines in his province.

More Talk of Reform.—Under the auspices of the Chinese Ministry of Finance, a financial conference will shortly be held in Peking with a view to introducing reforms into the present financial administration in the country. The Chiefs of the Financial Bureaux in the provinces have been requested to despatch delegates to Peking to participate in the conference.

Exchange Fluctuations in 1919.—Mr. H. F. Bell, in his annual report on exchange writes :—

The Exchange market during the year 1919 has been of so fluctuating a nature that a comprehensive report would seem to be rather a hopeless business.

All who were in Shanghai will know of the big cash premiums that were "going" from time to time and exporters will know, too, to their cost, of the high rates that they had to face with their bills.

As all my records of Exchange have been of the "official" quotations, the same have been adhered to, though I am fully conscious that these official rates do not convey the true state of our market.

Silver.—The lowest quotation was 47$\frac{3}{4}$ which remained unchanged at this price from February 24 to March 26. On May 9-10 information arrived that the Government restriction on silver had been removed, when a marked advance in the price of the metal took place, and though with some ups and downs this advance continued right on to the end of the year, the highest point touched being 79$\frac{1}{8}$ as reported on December 17, so that the rise from first to last, was from 47$\frac{3}{4}$ to 79$\frac{1}{8}$—31$\frac{3}{8}$.

T.T.—Dealing only with the "official" rates, the lowest was on March 8 and 10 4/6 and the highest 7/10 from December 15 to 30 (but during that fortnight probably 1/- over this rate was done).

Though exchange was so high at the end of the year, the average for the whole year works out at only 5/7$\frac{7}{8}$.

The last five years' averages are :—

1915 2/3$\frac{7}{8}$
1916 2/11$\frac{11}{16}$
1917 3/10$\frac{3}{4}$
1918 4/8$\frac{11}{16}$
1919 5/7$\frac{7}{8}$

Average rate for 5 years 3/10$\frac{15}{16}$.
Average rate for last 10 years 3/2$\frac{11}{16}$.

SUMMARY OF EXCHANGE HIGHEST AND LOWEST
With Average Monthly Rates 1919.

Highest

Month	Date	Bar Silver	T.T.	4 M/s. Credits
Jan.	All Jan.	48$\frac{7}{16}$	5/1	5/3$\frac{1}{2}$
Feb.	7	48$\frac{7}{16}$	5/-	5/2$\frac{1}{2}$
Mar.	31	49$\frac{3}{4}$	4/8$\frac{1}{2}$	4/10$\frac{1}{2}$
April	1.2-30	49$\frac{3}{4}$	5/-	5/2
May	13	58	5/3	5/5
June	18-19	54$\frac{7}{8}$	5/4$\frac{1}{2}$	5/6$\frac{3}{4}$
July	31-1/8	55$\frac{5}{16}$	5/6	5/8$\frac{1}{2}$
Aug.	28-9	61$\frac{1}{4}$	5/11$\frac{1}{2}$	6/2
Sept.	25-7	63$\frac{3}{8}$	6/3	6/6
Oct.	30-31	66$\frac{1}{2}$	6/8	6/11$\frac{1}{2}$
Nov.	26	76	7/4	7/8$\frac{1}{4}$
Dec.	17-18	79$\frac{1}{8}$	7/10	8/2$\frac{1}{4}$ Highest

Lowest

Date	Bar Silver	T.T.	4 M/s. Credits		Average Monthly Rate	
All Jan.	48$\frac{7}{16}$	5/-	5/2$\frac{1}{2}$		5/-$\frac{1}{2}$	Average rate 6 Mos. = 4/11$\frac{3}{16}$
27	47$\frac{3}{4}$	4/7$\frac{1}{2}$	4/10	Lowest	4/9$\frac{1}{16}$	
8-11	47$\frac{3}{4}$	4/6	4/8	Lowest	4/7$\frac{3}{16}$	
28-3/7	48$\frac{3}{4}$	4/8$\frac{1}{2}$	4/10$\frac{1}{2}$	Lowest	4/9$\frac{13}{16}$	
8-2	48$\frac{5}{8}$	4/11$\frac{1}{2}$	5/1$\frac{1}{2}$		5/1$\frac{9}{16}$	
3	53$\frac{1}{8}$	5/2$\frac{1}{2}$	5/4$\frac{1}{2}$		5/3$\frac{11}{16}$	
3-4	53	5/3	5/5$\frac{1}{4}$		5/4$\frac{3}{4}$	Average rate 6 mos. = 6/-$\frac{3}{8}$
1	55$\frac{5}{16}$	5/6	5/8$\frac{1}{2}$		5/9$\frac{1}{4}$	
1	58	5/10	6/-$\frac{1}{2}$		6/-$\frac{3}{4}$	
11-14	62$\frac{7}{8}$	6/3	6/6$\frac{1}{2}$		6/4$\frac{11}{16}$	
1	65$\frac{1}{2}$	6/6	6/9$\frac{1}{2}$		6/11$\frac{5}{8}$	
1-11	72$\frac{5}{8}$	7/4	7/8$\frac{1}{4}$		7/7$\frac{1}{4}$	

The £5,000,000 Loan.—It is reported that negotiations are still proceeding between the old Consortium bankers and the Chinese Government for a loan of £5,000,000. The Chinese Government is hopeful of getting the money before the end of February.

Bank Note Values.—It is interesting to note that Bank of China notes are worth $1.16 in silver for every dollar in paper in Canton, while in Peking they are at a heavy discount.

Hoarding Silver in China.—Mr. Chang Kung-chuan, Vice-Governor of the Bank of China, says : "According to reports to hand, the export trade of China has been decreased by $100,000,000 annually while $300,000,000 worth of silver has been stored up by the people within the last three years. For the last six or seven years, all the mints in China have produced about $600,000,000 worth of silver coins.

The habit of hoarding silver must be done away with if the native trade is to be improved. The redemption of the banknotes also depends largely upon the abolition of the silver-hoarding habit of the Chinese people.

MISCELLANEOUS

Jehol Development.—A number of Tientsin merchants have petitioned the Minister of Commrce and Agriculture at Peking for permission to organize a company to develop the resources of Jehol, such as mining, afforestation, etc.

Japan and the Shantung Rights.—Mr. Obata, the Japanese Minister at Peking, recently notified the Chinese Government that the Peace Treaty having come into effect, Japan succeeds to the rights enjoyed by the Germans at Kiaochow, in accordance with the terms of the Peace Treaty. He informed the Government that the Japanese Government were ready to begin negotiations for the restoration of the former leased territory, if the Chinese Government were also willing. He also said that Japan would immediately withdraw the railway grants, therefore it was to China's interest to negotiate as soon as possible. The Chinese Government had made no reply when this issue went to press.

Company Promotion in Japan.—Mr. Hara, the Premier of Japan, in a new year statement, deplored the growth of luxurious tendencies among certain classes of Japanese. He did not regard the promotion of large numbers of joint-stock concerns as a healthy economic sign and, he said, "judging from what occurred after the conclusion of the Russo-Japanese war, it is not at all improbable that the crash may come at any moment." He urges the Japanese to refrain from indulgence in luxurious habits.

Pumps for Tientsin.—The Tientsin Municipal Council are inviting tenders for a pumping plant capable of discharging 66,000 gallons per minute against a total head of 13 feet.

Manchurian Development.—It is reported that the Manchurian Development Company, which was established by General Chang Tso-lin, Tuchen of Fengtien, and Japanese capitalists will have power to open mines and to issue bank-notes.

Rubber in Borneo.—There are at present upwards of 40,500 acres under rubber cultivation in the different Residencies of the state of North Borneo, of which more than 23,300 are in full tapping.

Agricultural Development in the P. I.—The National Development company, the 50 million peso Philippine Government corporation, has purchased a big tract of land near Cabanatuan, Nueva Ecija, for a rice and corn plantation. The land has an area of over 11,400 hectares and cost the government about P.290,000.

Manila Budget for 1920.—The municipal council of Manila has approved the city budget for 1920. It carries about P.6,500,000, or nearly P.1,000,000 more than last year's.

Dye Imports.—Aniline dyes to the value of £50,000 were imported into Hongkong from the United States and Japan during the first six months of this year, and requirements are increasing.

A Progressive Chinese Official.—The Tuchun of Shansi province, who has carried on a very progressive policy, has certainly inspired others to follow suit, the latest being General Chen Chiung-ming, of Southern Fukien. He has established Municipal Councils in all cities under his jurisdiction, and has encouraged local self-government and modern methods for the development of the cities. Soldiers have been employed on various public works and over two hundred *li* of roadway has so far been built.

Chinese Oppose Stamp Tax.—Several telegrams have reached the Central Government at Peking from the Chinese Chamber of Commerce opposing the suggested introduction into the Shanghai settlements of revenue stamps. It is understood that the Government is making arrangement for the enforcement of revenue stamps in Shanghai. The merchants have informed the Government that in recent years the public have been taxed to the utmost extent, and refuse any new tax.

Hongkong's Economic Resources.—The Governor of Hongkong has appointed a Committee to enquire and report on the question of the development of the economic resources of the Colony of Hongkong. The following have been appointed members of the Committee :—The Hon. Sir C. P. Chater, KT., C.M.G., Chairman; the Hon. Mr. E. V. D. Parr, Deputy-Chairman; the Hon. Mr. Lau Chu-pak, the Hon. Mr. John Johnstone, Mr. J. Barr, Mr. A. Beattie, Mr. Chan Harr, Mr. Chow Shou-son, Mr. R. M. Dyer, Mr. A. Gibson, Mr. D. K. Moss, Mr. J. Reid, Mr. Ross Thompson, and Mr. W. J. Tutcher.

Japanese Sugar Venture in Java.—Japanese sugar venture on a large scale is reported from Java, where a group of enterprising Japanese business men have succeeded in buying up for Y.3,500,000 a complete sugar estate, including factories, etc., formerly run by the German interests. The present scheme is based on this purchase, and the capital is estimated at about Y.10,000,000. The shares issued have practically all been taken up by the promoters, among whom the names of Messrs. Yamamoto Teijiro and Mogi Sohei are conspicuous. The development of the project is followed with a great deal of attention.

Agricultural Progress in South China.—News from Nanning, Kwangsi Province, states that remarkable progress is being made in the planting of wood-oil, cotton, and camphor trees, by the Agricultural Experiment Station which is located near Tai Mok mountain, outside the northern gate of Nanning city.

To Investigate Industries.—Mr. Yih Kung-cho, former Vice-Minister of Communications, who has recently been on a trip to Europe, has been appointed by the Peking Government to investigate industrial possibilities in the various provinces. Mr. Yih has submitted a memorandum to the Kuowuyuan, setting forth a number of recommendations in connection with his mission and asking the Government to grant him a monthly allowance of $7,000 for the travelling expenses of his party while on the mission to the provinces. His recommendations regarding the encouragement of industrial development will be brought up for consideration at a Cabinet meeting.

Police Adviser.—It is reported from Peking that the Ministry of the Interior has decided to renew the engagement of General Bruce as Adviser on police matters for another year. The salary is stated to be $1,800.

Disbandment of Troops.—Since the issue of the Cabinet order for the reduction of 20 per cent. of the military expenses all over China, several provinces have commenced the work of reducing their standing army. The Ministry of War and the Board of the General Staff have received reports from various Tuchuns on the progress of the disbandment of superfluous troops. In Chihli, Fengtien, Kiangsu and Anhui, a reduction of 10 per cent. has already been effected throughout all districts. In Hupeh, Kiangsi, Chekiang, and Shantung a reduction of 10 per cent. will be completed during January. In Heilungkiang, Sinkiang, Shensi and Kansu, a reduction of 10 per cent. will be effected within a period of two months on account of the frontier and other difficulties. However, as the troops in South Kiangsi, South Hunan and South Shensi are doing important defence work, they cannot be reduced while the plan of disbandment has not yet been adopted by the South. The Tuchuns of these provinces have requested the Government to postpone the operation of the plan for three months, during which negotiations will be carried on with Southern leaders.

America Withdraws Troops from Siberia.—The Government of the United States issued a statement on January 13 announcing the impracticability of continuing to act on the offensive in co-operation with anti-Bolshevik forces in Siberia. In view of this fact arrangements for the concentration of American Troops at Vladivostok for return to America are being made. Their embarkation is expected about February 10. The statement adds : "Careful consideration has also been given to the possibility of continuing after the departure of the American troops the assistance of American railway experts in the operation of the Trans-Siberian and Chinese Eastern railways. It will be recalled that it is expressly stipulated in the plan for the supervision of these railways which was submitted by the Japanese Ambassador at Washington, January 15, 1919, that the (? arrangements) should cease upon the withdrawal of the foreign military forces from Siberia and that all foreign railway experts appointed under the arrangements should then be recalled forthwith. The experience of recent months in the operation of the railways under conditions of unstable civil authority and frequent local military interference furnishes a strong reason for abiding by the terms of the original agreement. Plans will be made accordingly for the withdrawal of the American railway experts under the same conditions and simultaneously with the departure of the American military forces."

PERSONAL

Mr. Allen Clifford Arthur Henning has been admitted as a partner in the firm of William Forbes & Co., Peking.

Mr. G. N. Manley of Messrs. Brunner, Mond & Company has been transferred from Hongkong to Nanking.

John R. Wilson, local manager of the Overseas Trading Company, has been appointed Philippine agent of the Los Angeles-Pacific Navigation Company, which is proposing to establish a direct freight and passenger line between Manila and San Pedro.

Mr. A. G. Stephen, manager of the Hongkong & Shanghai Banking Corporation, has received the distinction of the Chiaoho (Excellent Crop) Second Class, from the Peking Government.

E. F. Webster, the new vice-president of the Pacific Commercial Company, has arrived from the United States to take up his duties in Manila. Mr. Webster succeeds H. B. Pond, who is now general manager of the company.

Mr. John Prentice on January 3 completed his fifty years' residence in Shanghai. Mr. Prentice came out to join the technical staff of Messrs. Muirhead & Co. in January, 1870, and became one of the pioneers of British shipbuilding and engineering in China. During his half century here he has been identified with all movements affecting the welfare of the settlement.

Mr. J. B. Suttor, Commercial Commissioner in the East for the Government of New South Wales and who is stationed in Kobe, Japan, left there on December 27 on an inspection trip of the Philippines, China, the Straits Settlements and other places in the Far East.

Mr. C. Biren, for the last five years chief clerk of the Peninsular and Oriental S.N. Co., in Kobe, Japan, has recently been transferred to Shanghai.

Mr. Norman F. Blanch, general superintendent of Thos. Cook & Son for the Far East with his chief offices in Shanghai, has just returned from a four years stay in England.

Mr. G. H. Stitt, agent for the Hongkong and Shanghai Banking Corporation in Kobe, will leave there in the early part of February, 1920 to take charge of the Shanghai office of the bank during the absence of Mr. Stephen. Mr. Stitt will be temporarily succeeded by Mr. MacArthur of the Shanghai office, the latter having previously been in the Kobe office.

Mr. J. J. Steen, Managing Director for the International Trade Developer for the Orient, Australia and Africa, who has been attending the opening of a new branch office in Kobe, is visiting China. Mr. Steep will continue his trip to Australia thence for Africa in the interests of his firm whose headquarters is in Chicago.

It is stated that the President of China has recently ordered a sum of ten thousand dollars to be issued to Sir Richard Dane, former Co-Director of the Salt Administration, in appreciation of valuable services rendered by the latter.

Mr. Lu Tseng-hsiang, and Mr. C. T. Wang, two of China's delegates at the Paris Peace Conference returned to China towards the end of January.

Mr. J. O. P. Bland, the famous writer on Chinese subjects, is at present revisiting China.

Mr. W. G. Avery, General Manager of the Asia Banking Corporation, visited Manila, Hongkong and Canton during January. During his absence from Shanghai, his duties were assumed by Mr. J. H. Wickers, Assistant General Manager.

CORRECTION

On page 742, December issue, the name Myithyina should be Katha; and on the same page the word eastern should be western in the paragraph mentioning jade and marble.

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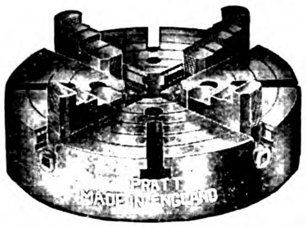

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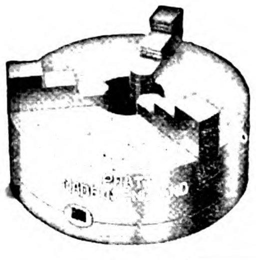

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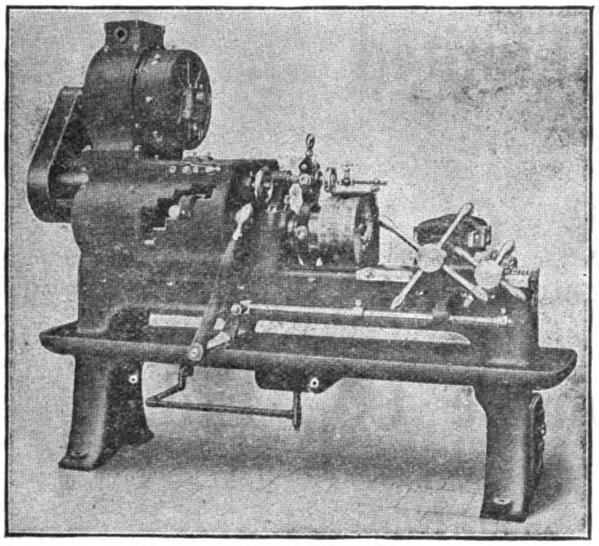

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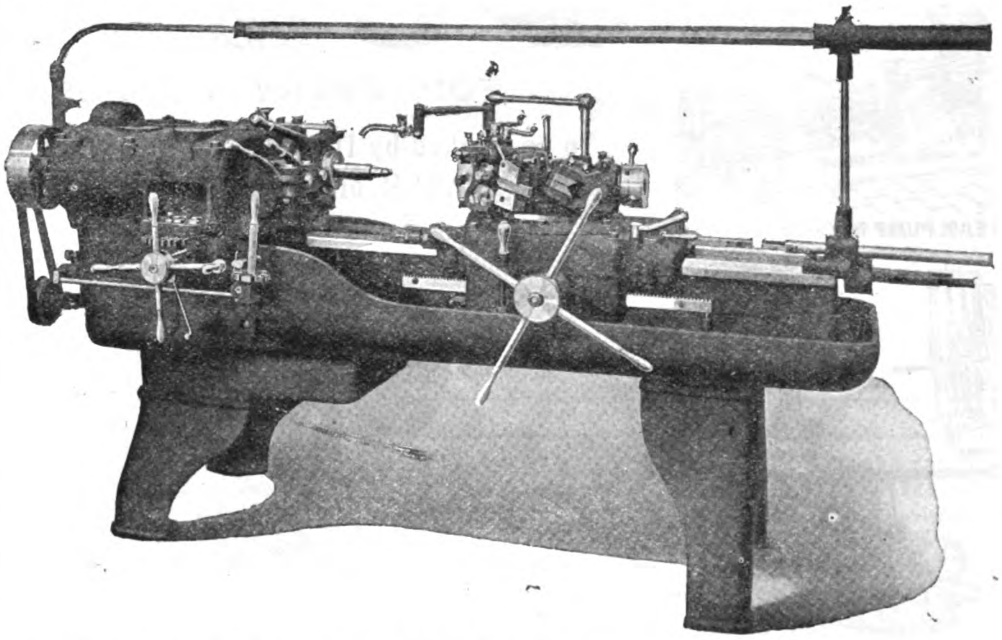

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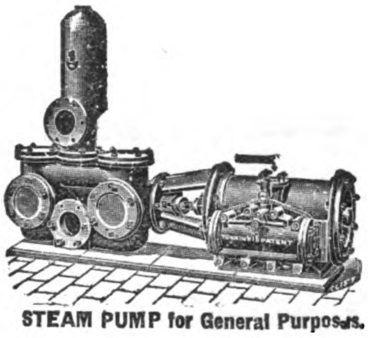

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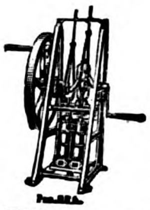

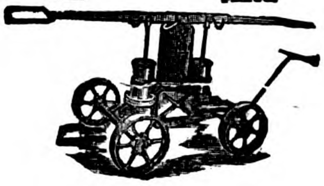

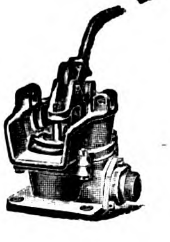

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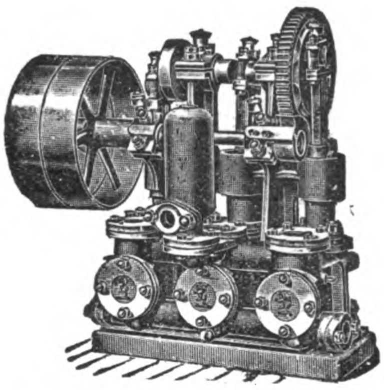

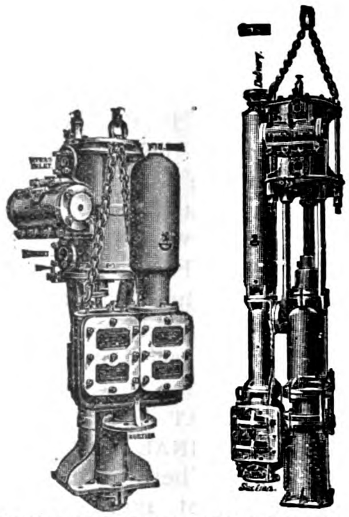

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Fig. 191.

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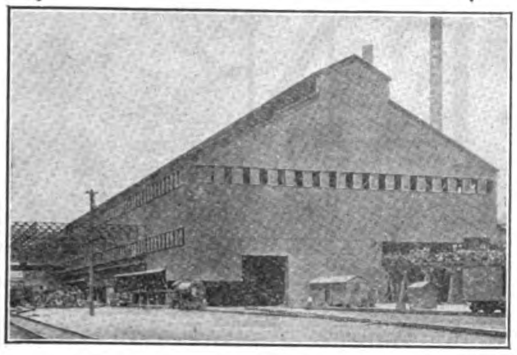

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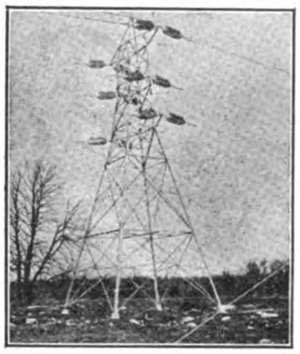

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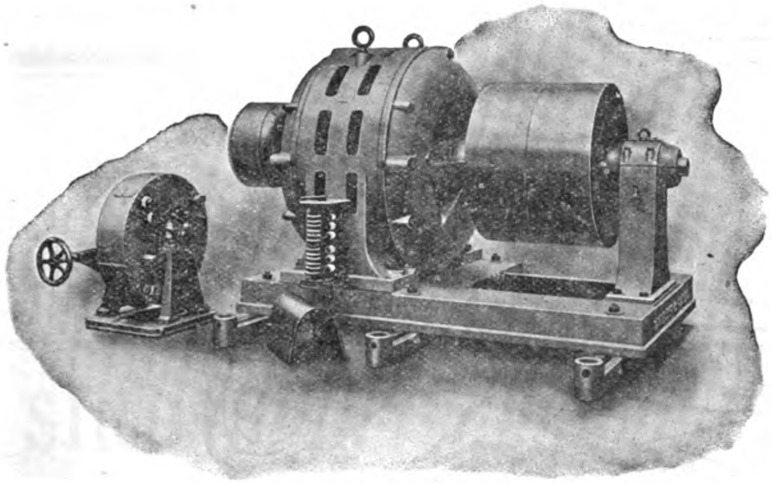

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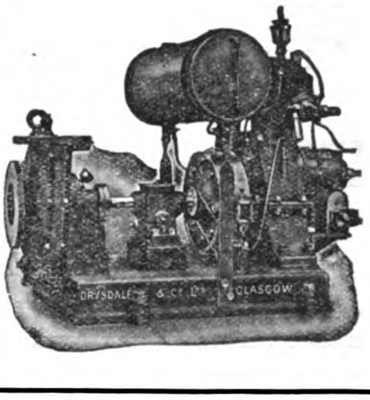

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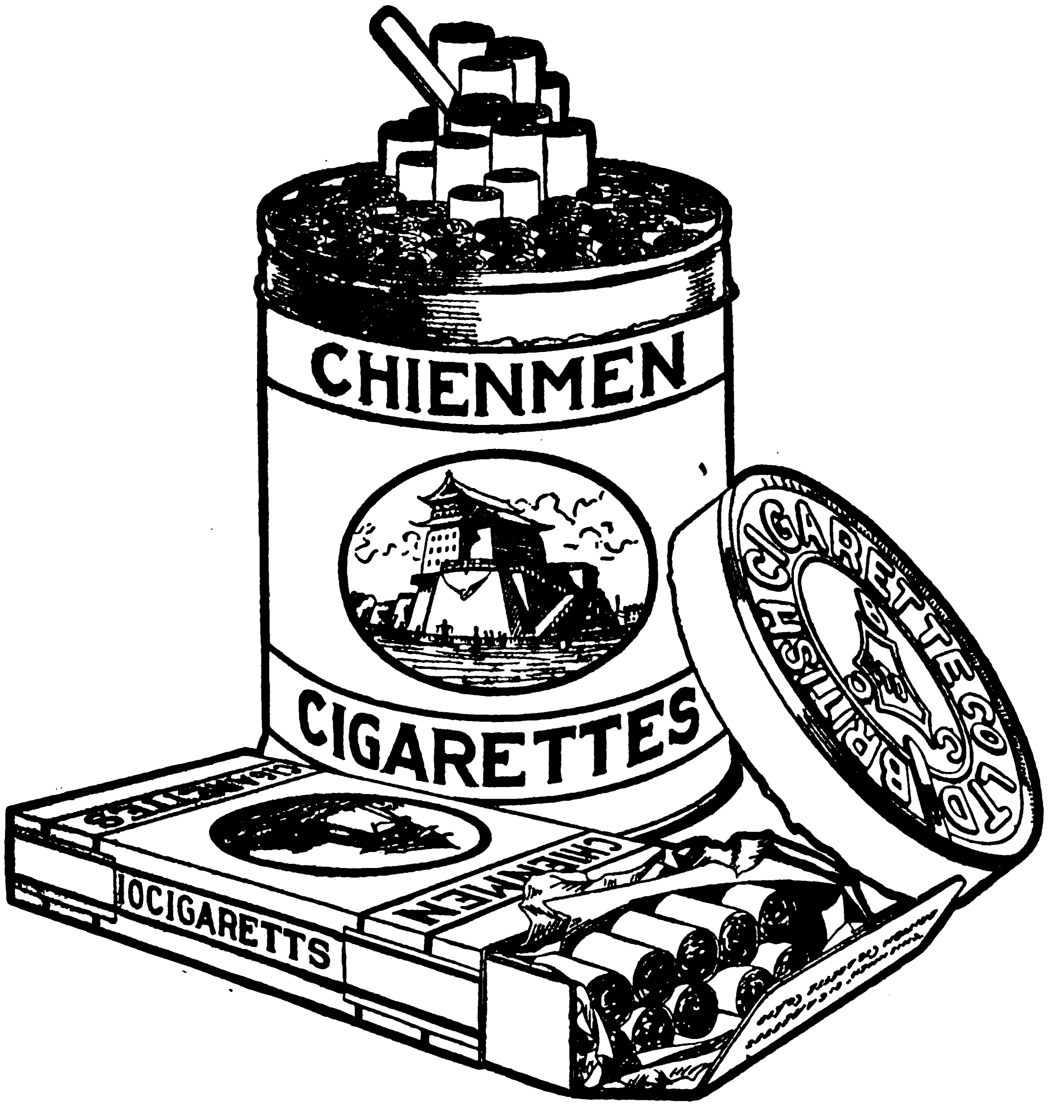

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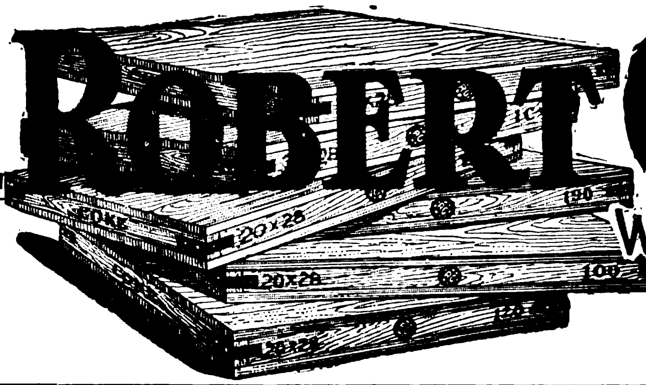

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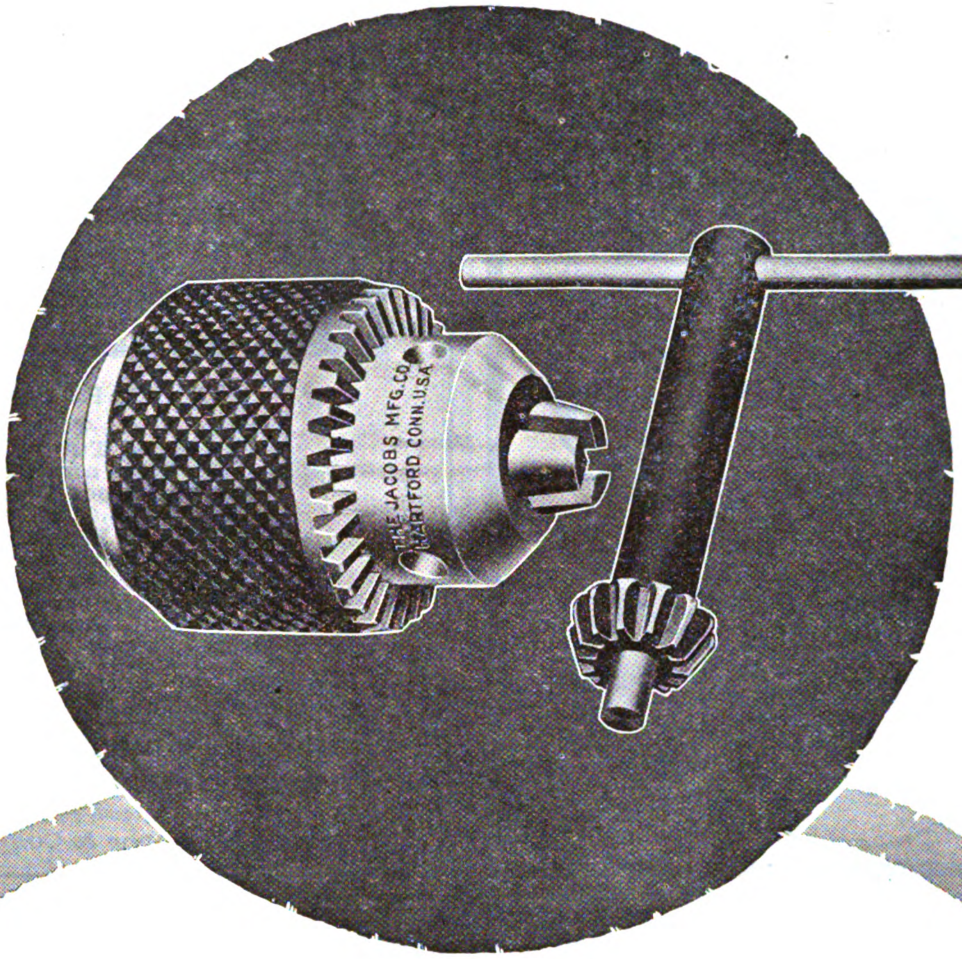

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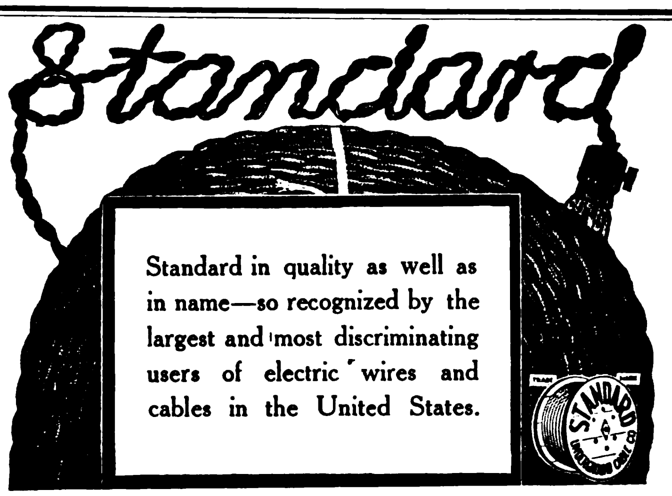

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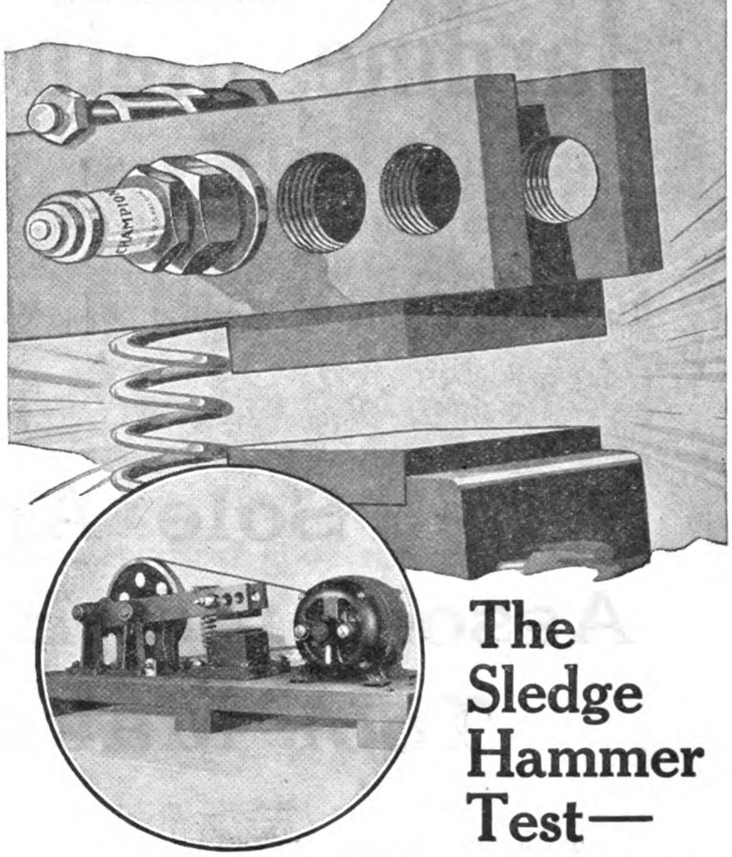

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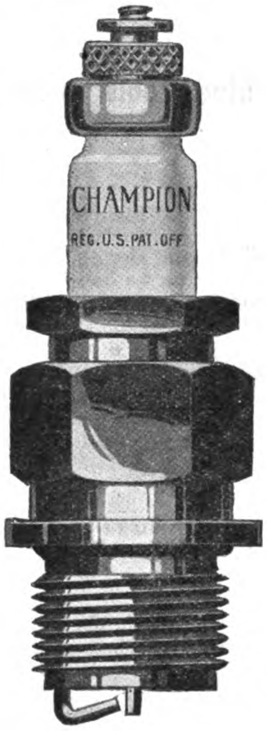

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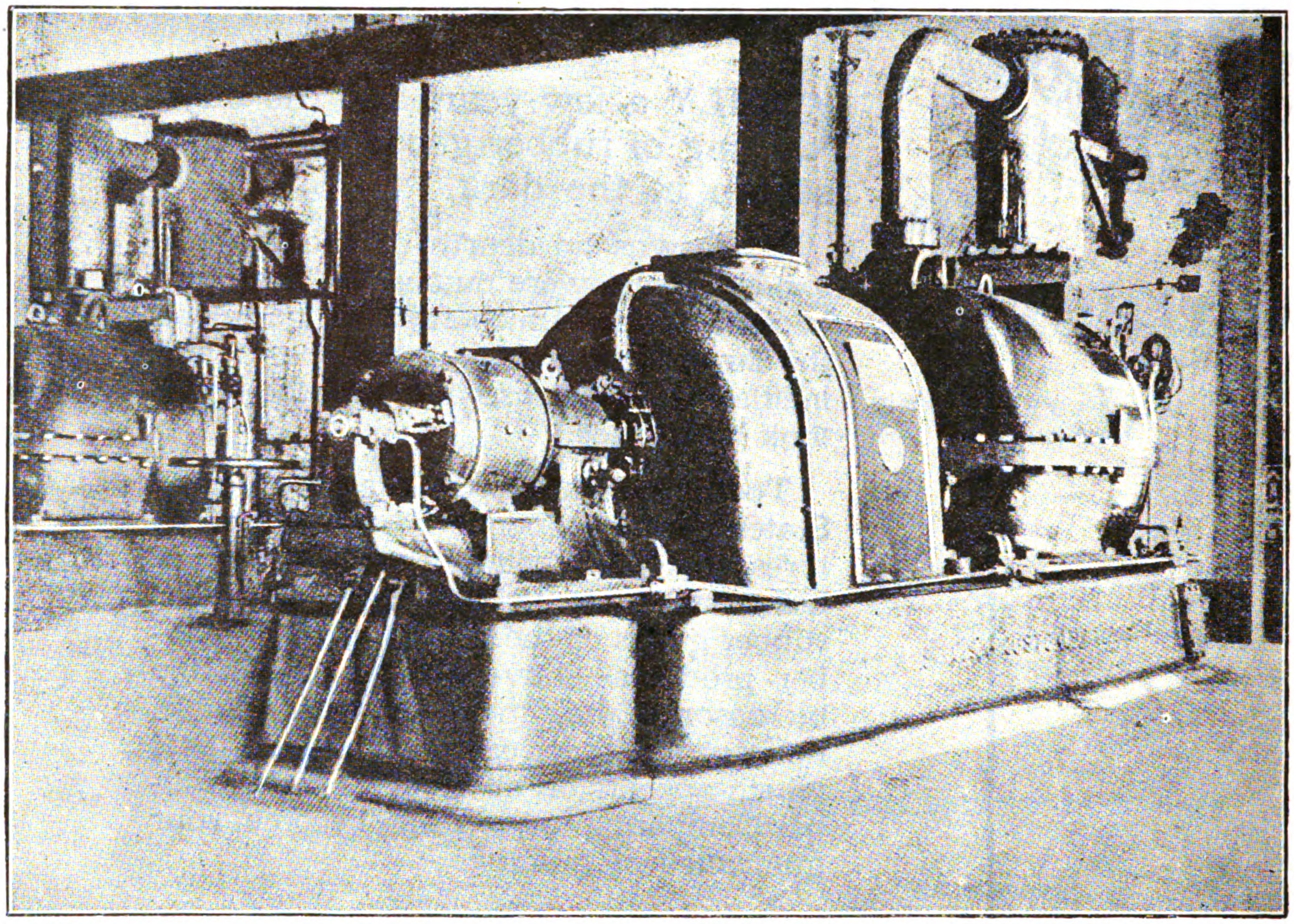

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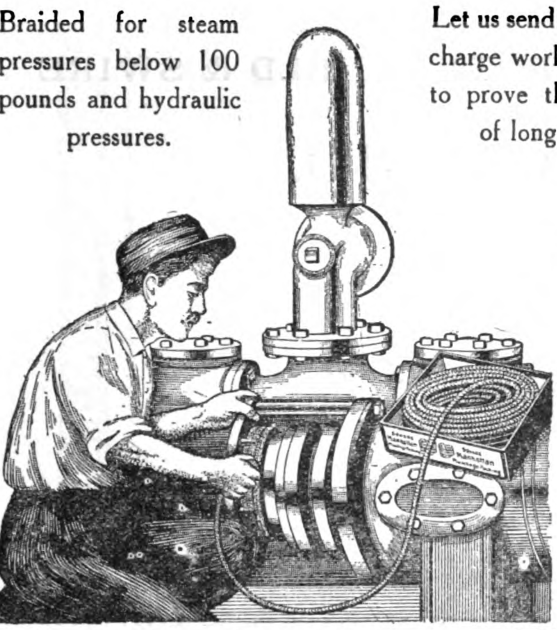

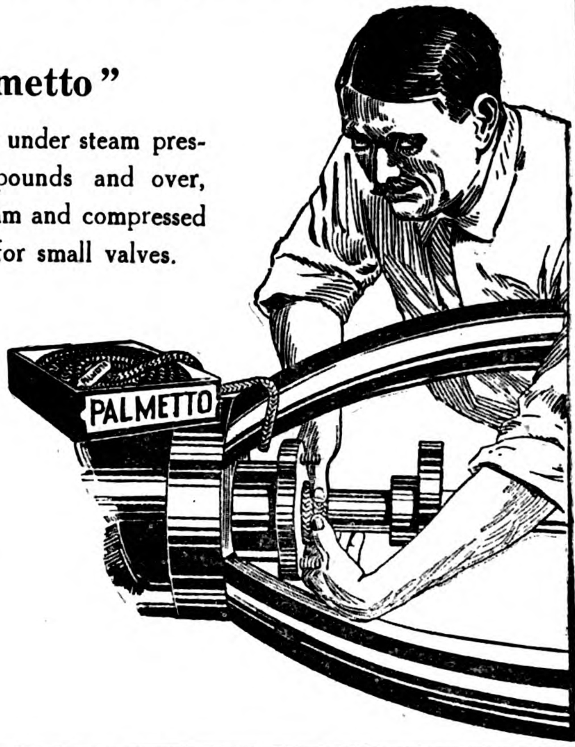

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Western Electric
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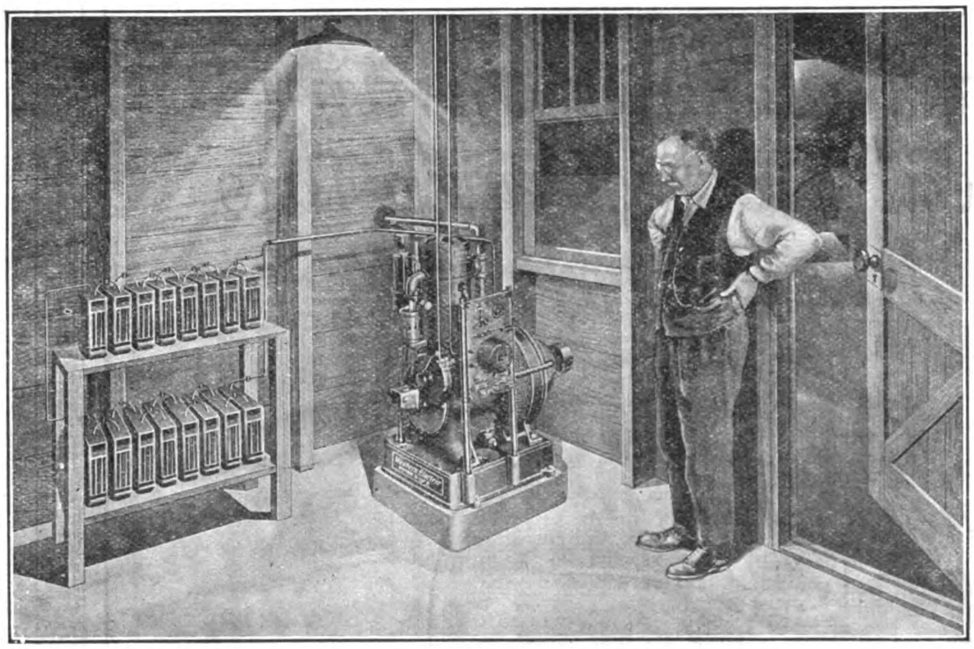

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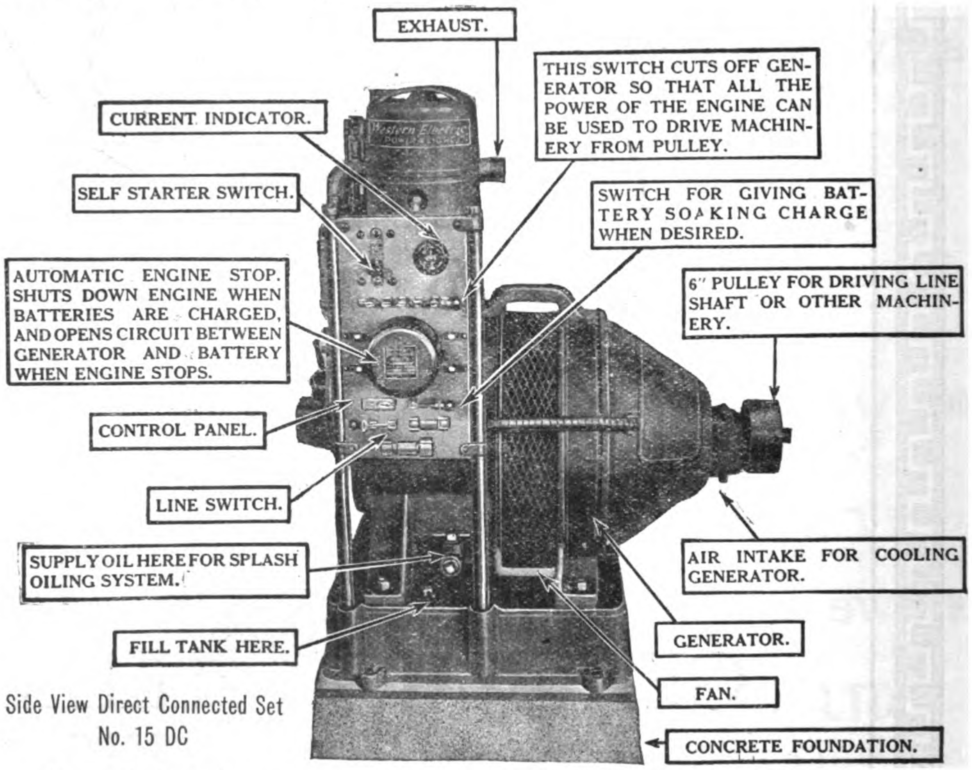

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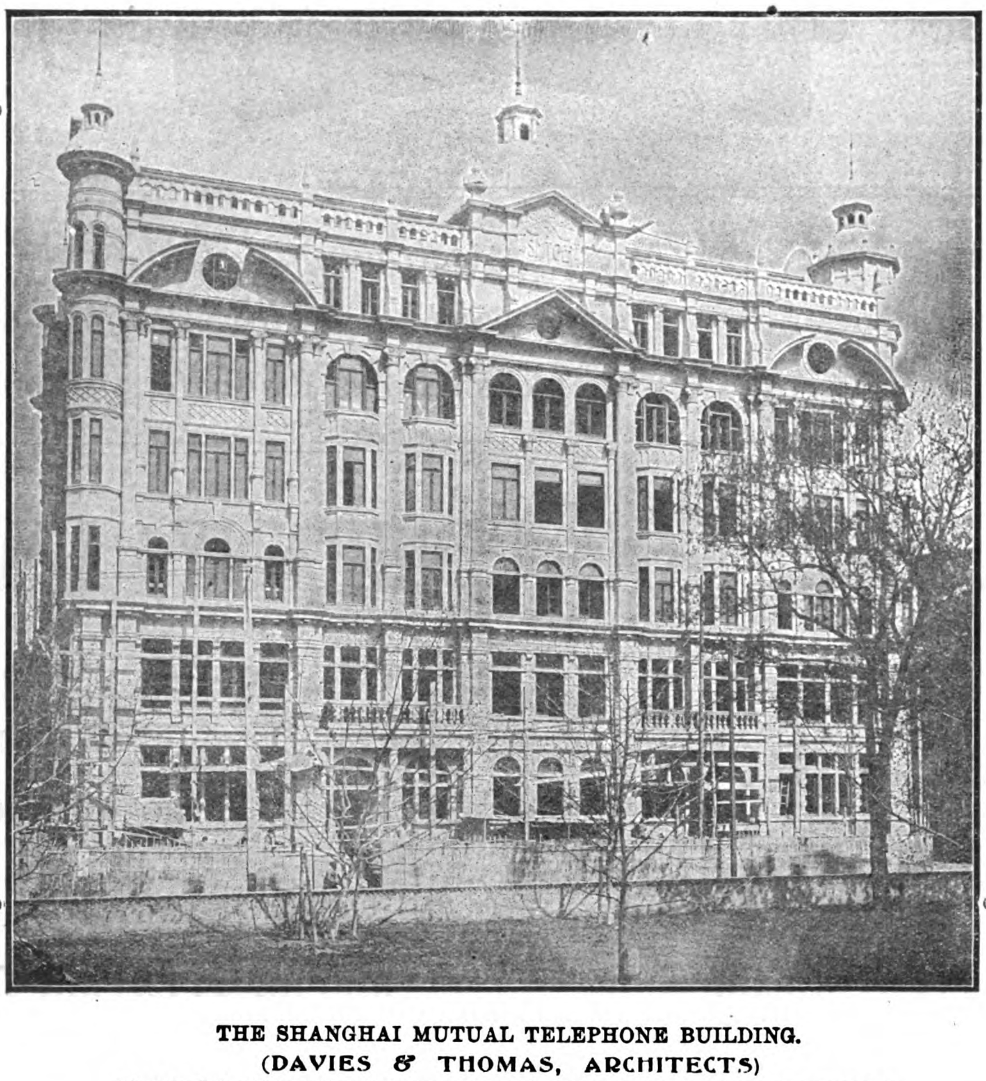

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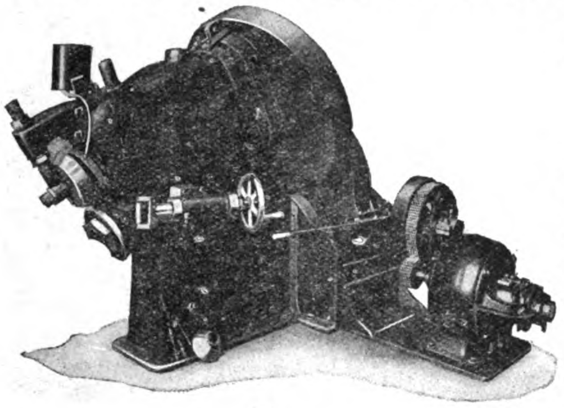
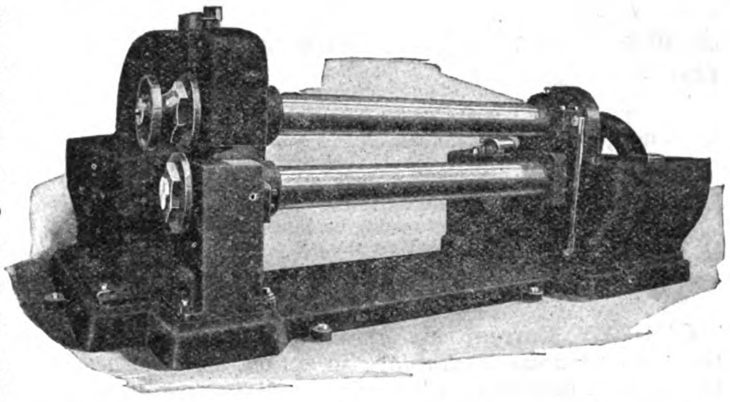


This machine will bevel all of the irregular and curved sheets usually required in boiler and tank construction. It will bevel-shear in-and-out curves of segments, angles, and such difficult work as boiler heads after flanging, manhole saddles, dome sheets; and, in addition, will handle straight work in a small proportion of the time in which it can be done by hand or on a plate planer.

Lennox Rotary Splitting Shear

(Housing Type)



The Lennox Rotary Splitting Shear is designed for straight shearing of sheets and plates, but will also cut round, square or flat bars of a diameter or thickness corresponding to the capacity of the tool for plates. The blades are milled, making the machine self-feeding, and, having two cutting edges, are reversible. The main frame is offset so that plates of any length may be split without distortion. The extended upper shaft carries a hold-down wheel to guide the plate and prevent it from tipping. This, together with the enclosed form cutter shaft, which operates as a rest, materially assists the operator and makes unnecessary the use of a hoist and an extra helper.

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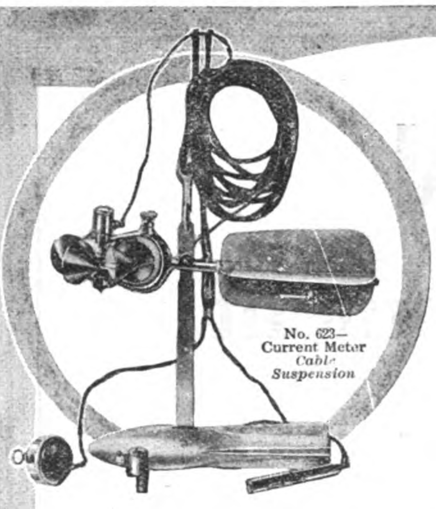

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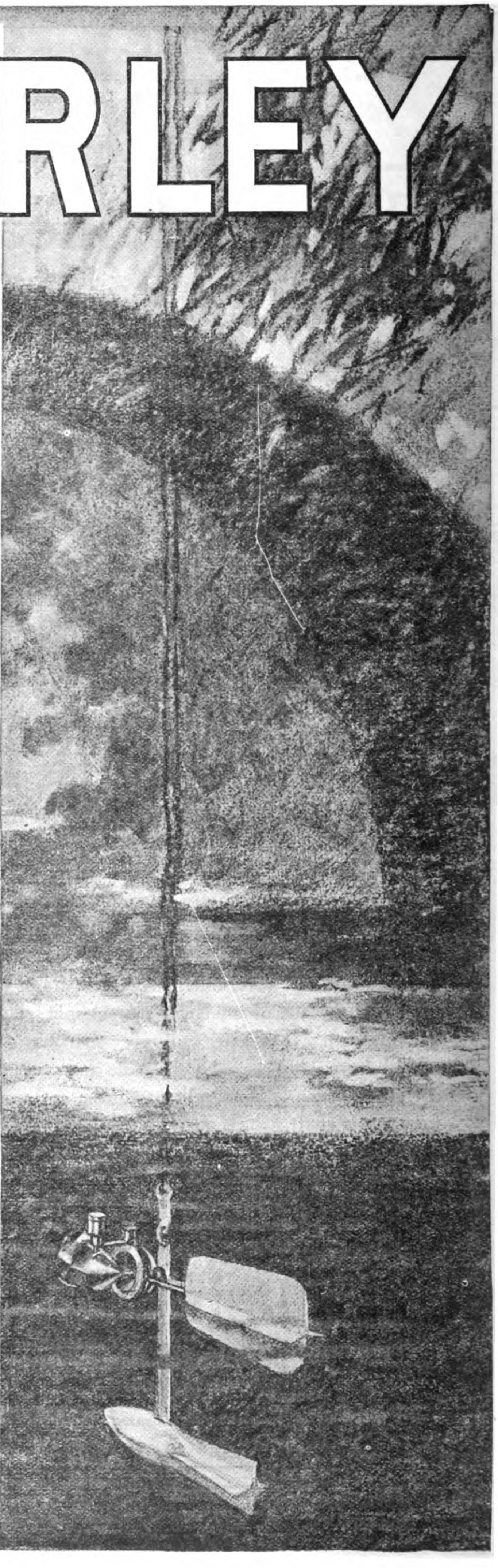

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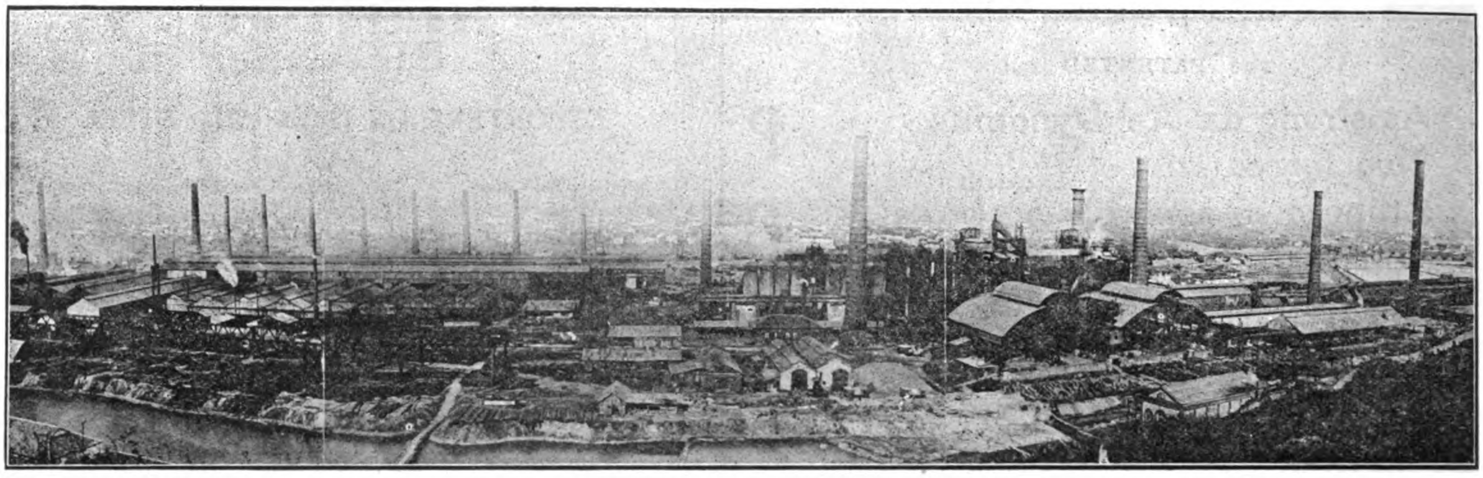

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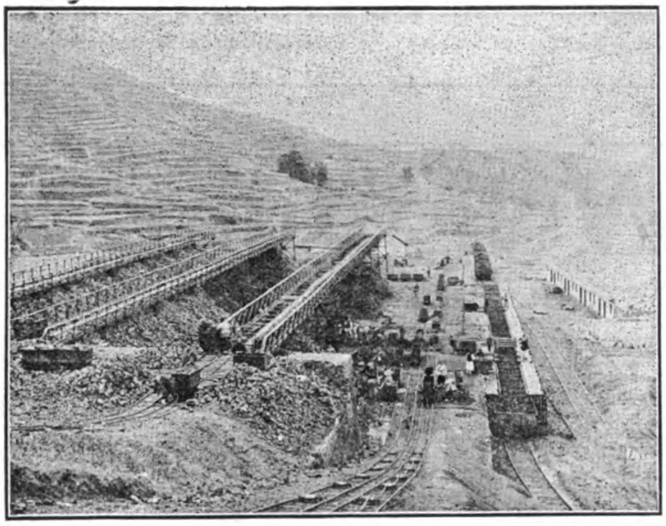
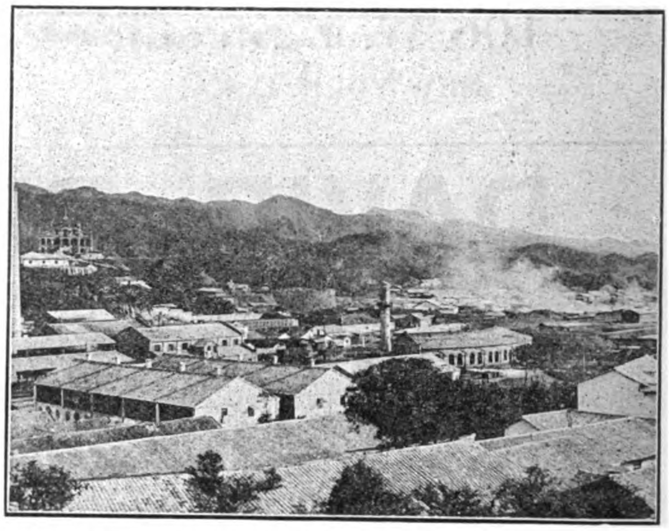


THE TIEHSHAN MINE AT TAYEH



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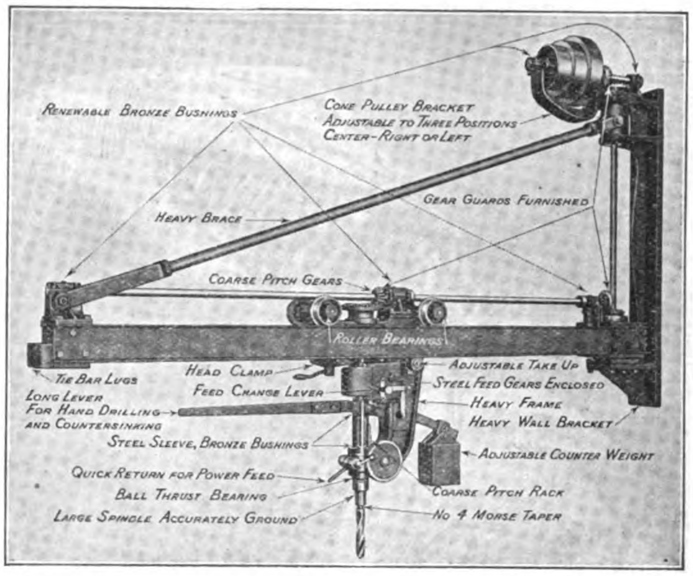

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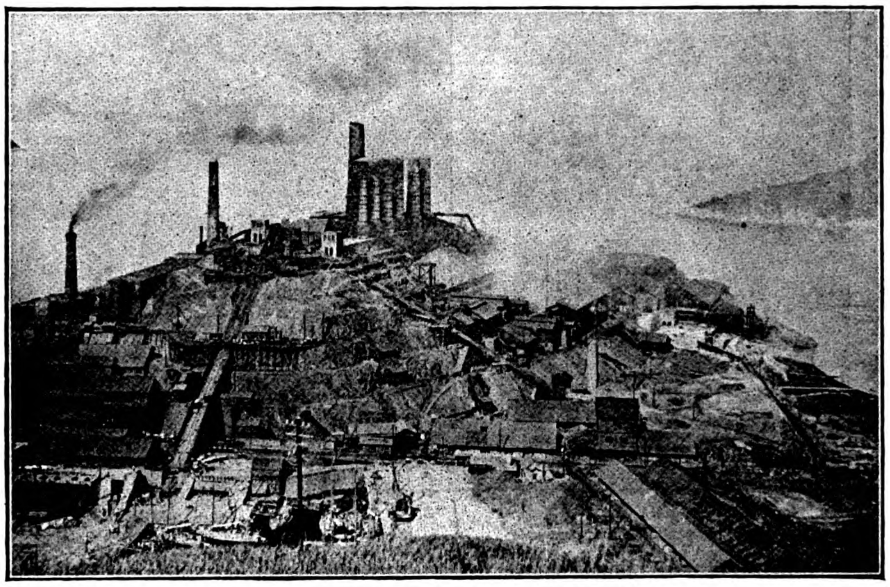

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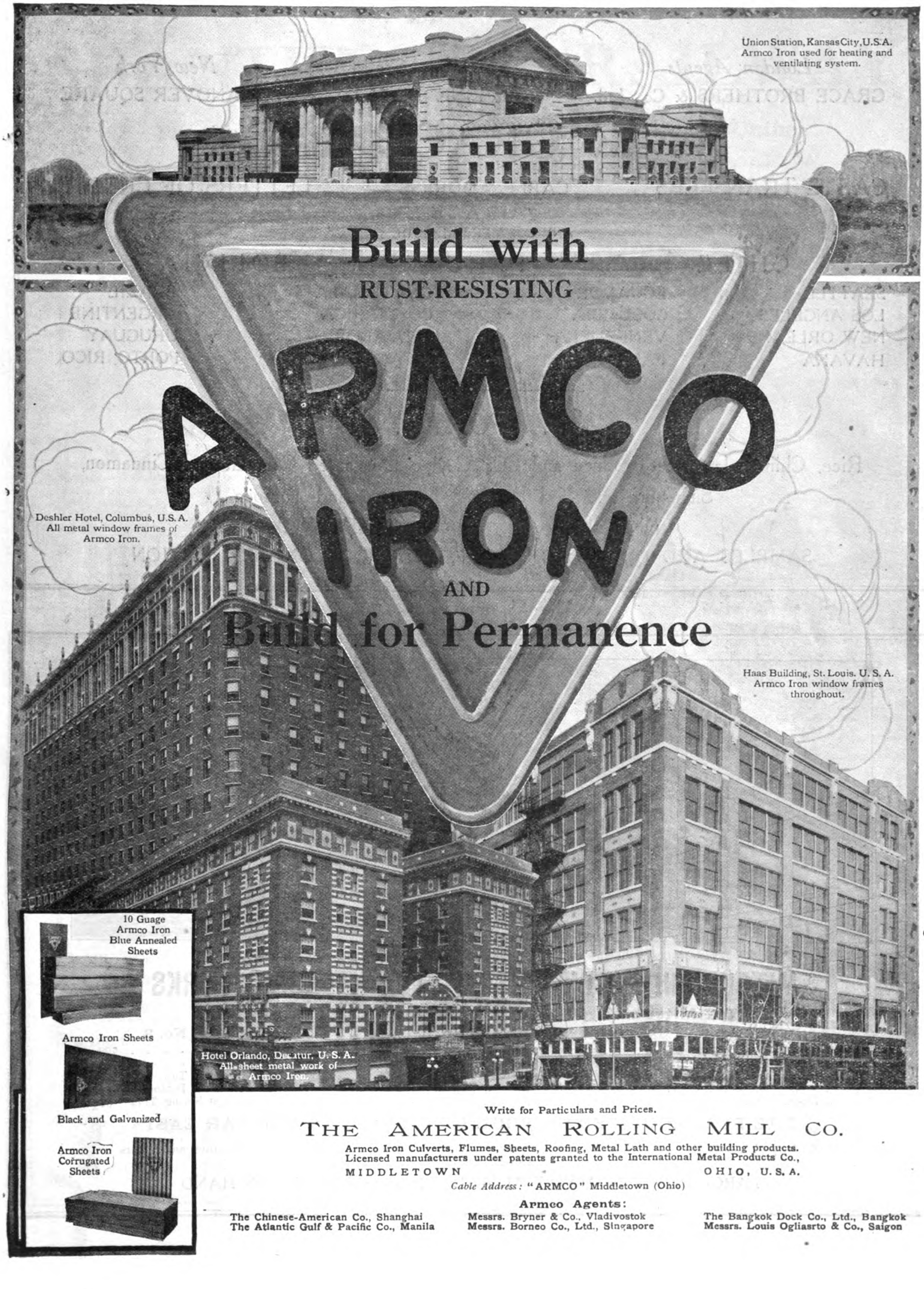
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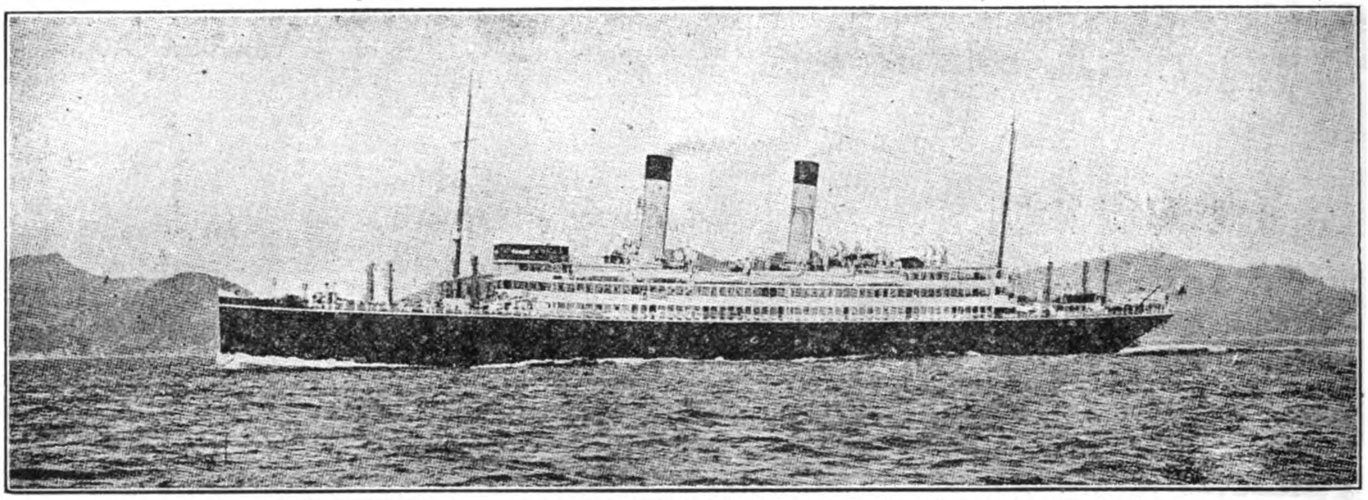

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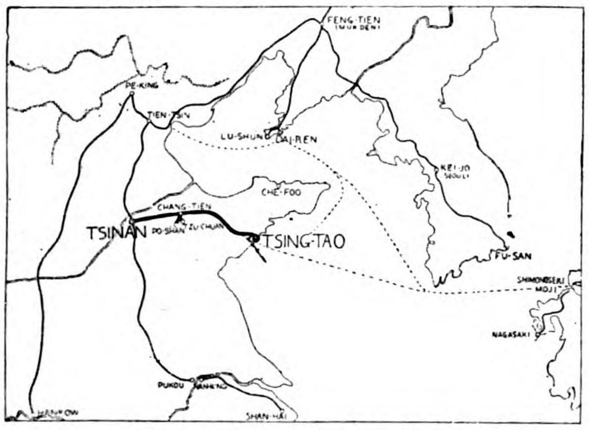

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Through passenger tickets are issued between the following principal stations of the Shantung Railway: Kiaochow, Kaomi, Fangtsu, Weihsien, Chingchow, Changtien, Chowtsun, Tsinan, Tzuchuan, Poshan, and the following points: In Manchuria—Port Arthur, Newchwang, Liaoyang, Fushun, Mukden, Tiehling, Kaiyuan, Changchun, Penchihu, Antung, and Dairen; in Japan—Yokohama, Nagoya, Yokkaichi, Osaka, Kobe, Ujina, Moji, Shimonoseki and Shanghai.

Steamer Connections—Steamers leave the wharves of the Large Harbour, Tsingtao, for Moji and Kobe every five days, for Shanghai about twice a week and for Dairen about three times a week.
For giving facilities to through passengers for Japan, a special train in connection with the night train No. 4 is operated from the Harbour Station to the Wharf, direct alongside the ship, on those days when the liners of the Nippon Yusen Kaisha, Osaka Shosen Kaisha, and Harada S.S. Co. are leaving.
Through passengers and their luggage are carried free of charge for this section.

Collieries—The Tzuchuan (Shisen) and Fangtzu (Boshi) Collieries are managed by the Mining Department of the Shantung Railway.
At present the daily output of Tzuchuan coal is about 1,500 tons, far surpassing the amount taken out when the Germans were in control. The coal is well-known for its good quality and fair price.

Tsinan—Tsinan, the capital of Shantung, is the western terminus of the Shantung Railway, and also one of the most important stations on the Tientsin-Pukow Railway.
The Tsinan Railway Hotel, furnished in modern European style, is found on the upper floor of the Tsinan Station, under the control of the Shantung Railway Administration.

THROUGH TRAIN SERVICE

Train No. 1 leaves Tsingtao daily 8.00 a.m. arrives Tsinan 6.30 p.m.
Train No. 3 leaves Tsingtao daily 7.00 p.m. arrives Tsinan 7.00 a.m.
Train No. 2 leaves Tsinan daily 9.00 a.m. arrives Tsingtao 7.30 p.m.
Train No. 4 leaves Tsinan daily 8.30 p.m. arrives Tsingtao 8.30 a.m.

Local Trains run between Tsingtao and Weihsien, Fangtzu and Tsinan, and on the Poshan and Tzuchuan colliery branches.

Fares—Tsingtao-Tsinan—1st class, $14.30; 2nd class, $7.20.

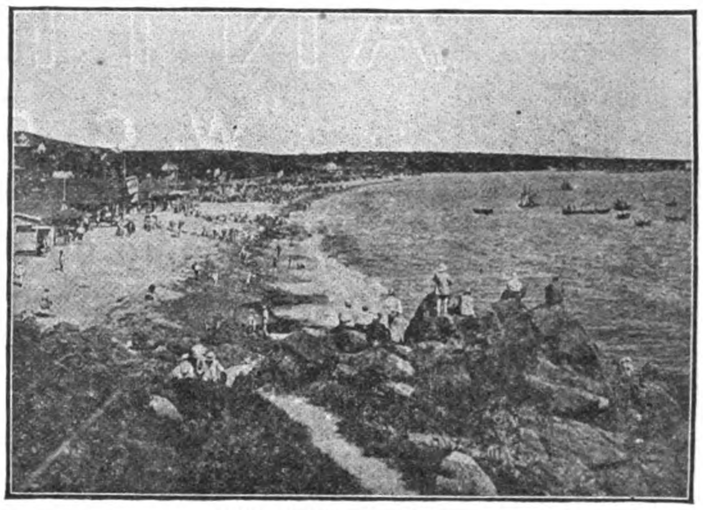
First Class Sleeping Car—A first-class sleeping car is attached to night trains Nos. 3 and 4 running between Tsingtao and Tsinan. For a berth in the sleeping car three yen in silver is charged in addition to the ordinary first-class fare, irrespective of distance.

Dining Car—A dining car is attached to through trains Nos. 1, 2, 3 and 4 running between Tsingtao and Tsinan. Meals are served to order at any time.

Ticket Agencies—The International Sleeping Car and Express Trains Co. and their Agents; Messrs. Thos. Cook & Son and their branch offices in various parts of the world.

Connections at Tsingtao—By steamer with Japan, Manchuria and Shanghai.

Connections at Tsinan—By Tientsin-Pukow Line with Tientsin, 6.40 a.m. daily, and with Pukow, 8.15 p.m. daily.



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Description of Tsingtao

Tsingtao is considered the most healthful place in all the Far East. The scenery including both mountains and sea, is most beautiful. There are quite extensive forest gardens, bits of woodland here and there, and many delightful shady lanes affording most interesting walks through them.

The roads are all broad, with very moderate gradients. They are of both macadamized and asphalt construction for vehicle traffic, while the sidewalks are either paved or concrete. These streets are practically all lined with beautiful shade trees.

The buildings are constructed principally in modern European style, with red tiles and white walls, contrasting pleasantly with the surrounding green mountains and blue sea.

The climate here is fine from Spring to Autumn, being neither too hot nor too cold. These climatic conditions make the place a favourite summer resort for Europeans and Americans from Shanghai, Tientsin, and other places.

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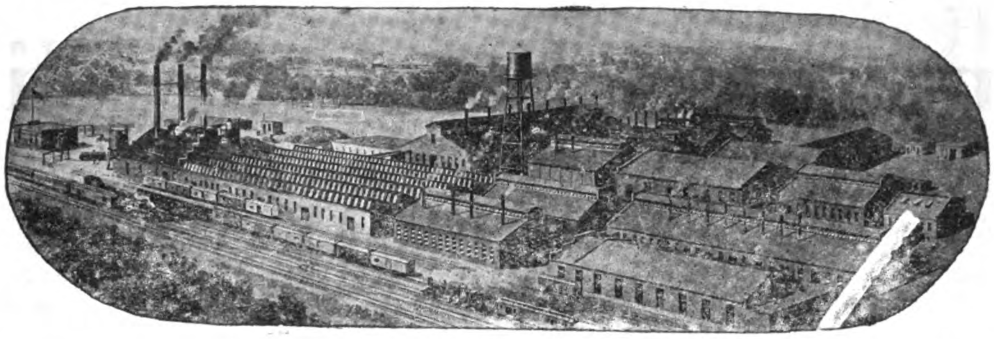

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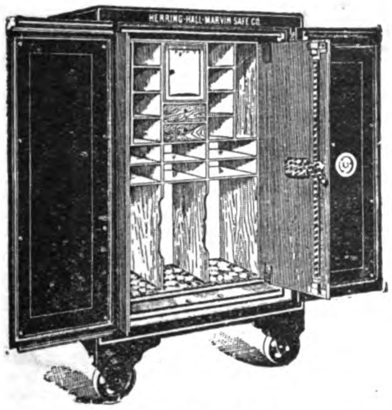

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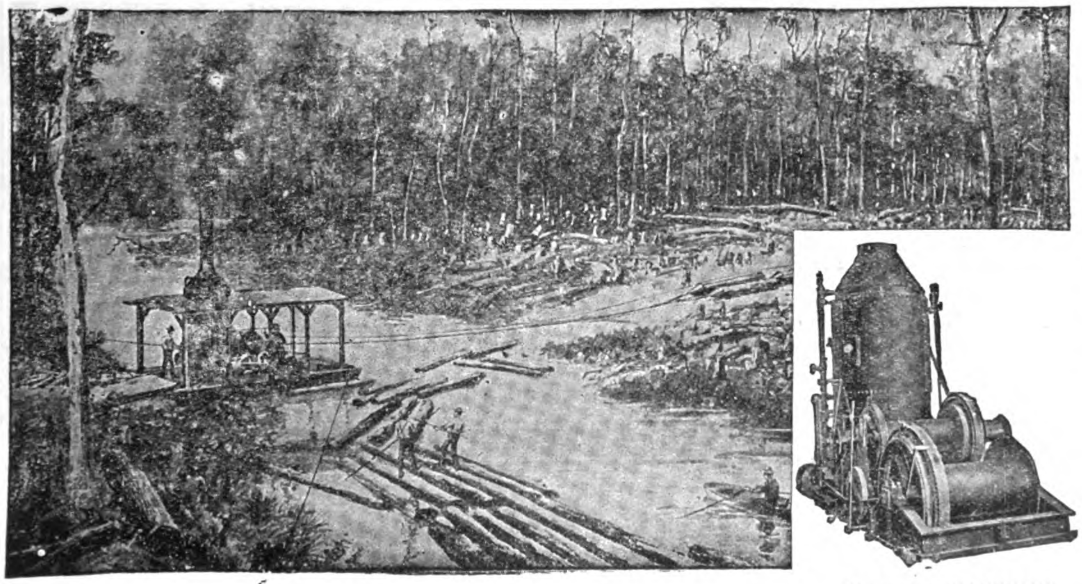

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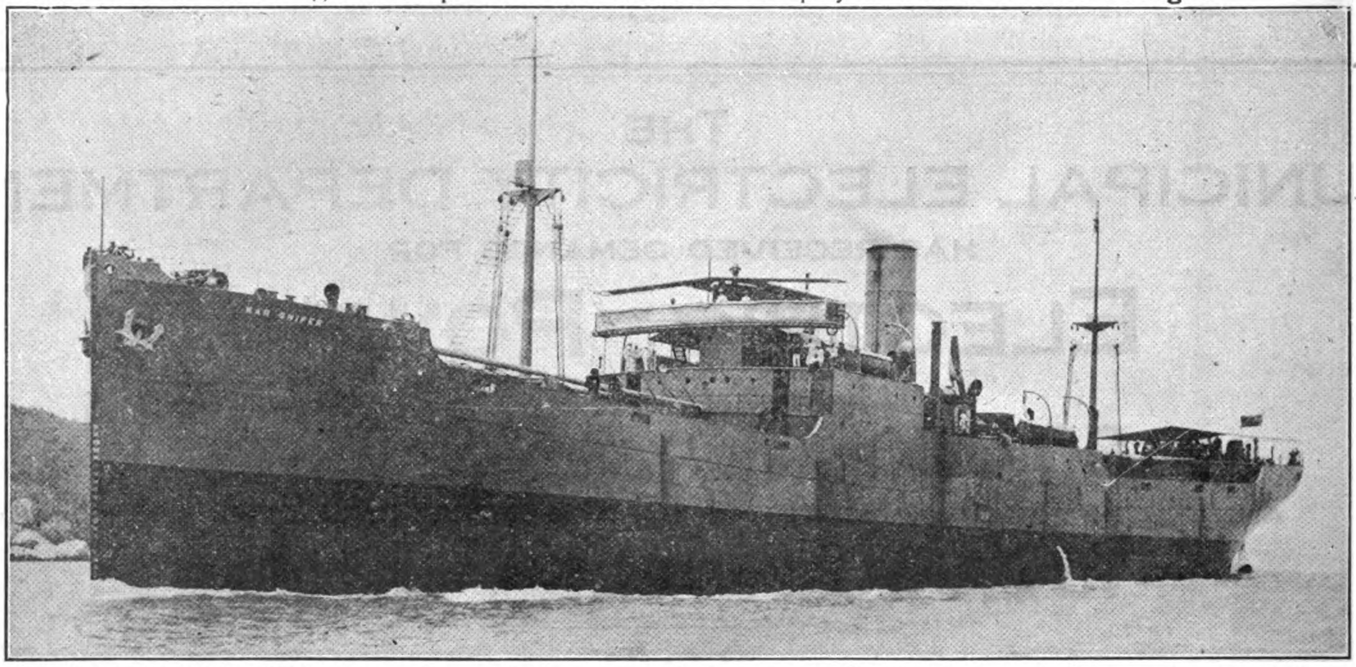

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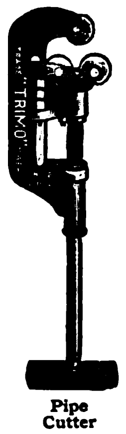

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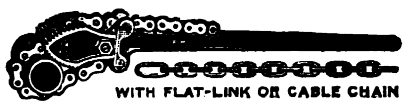

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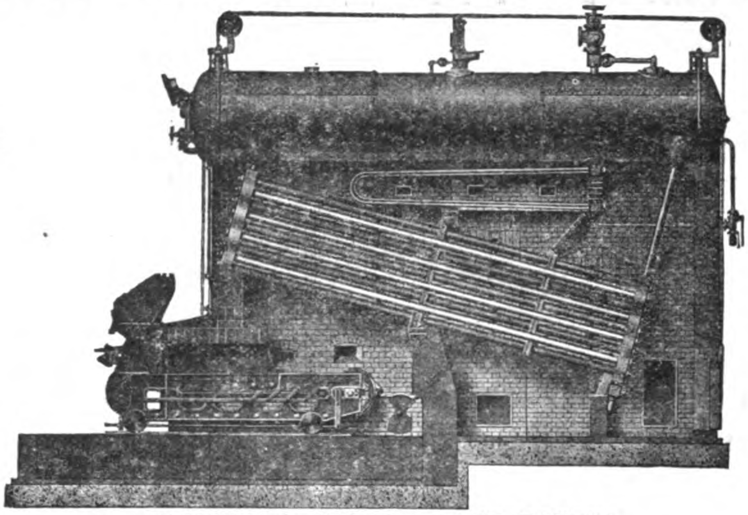

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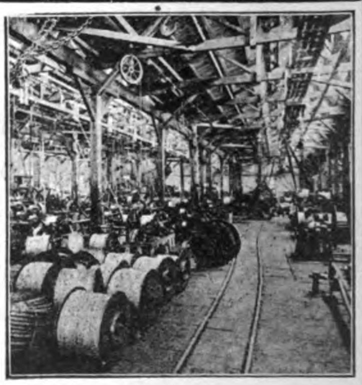

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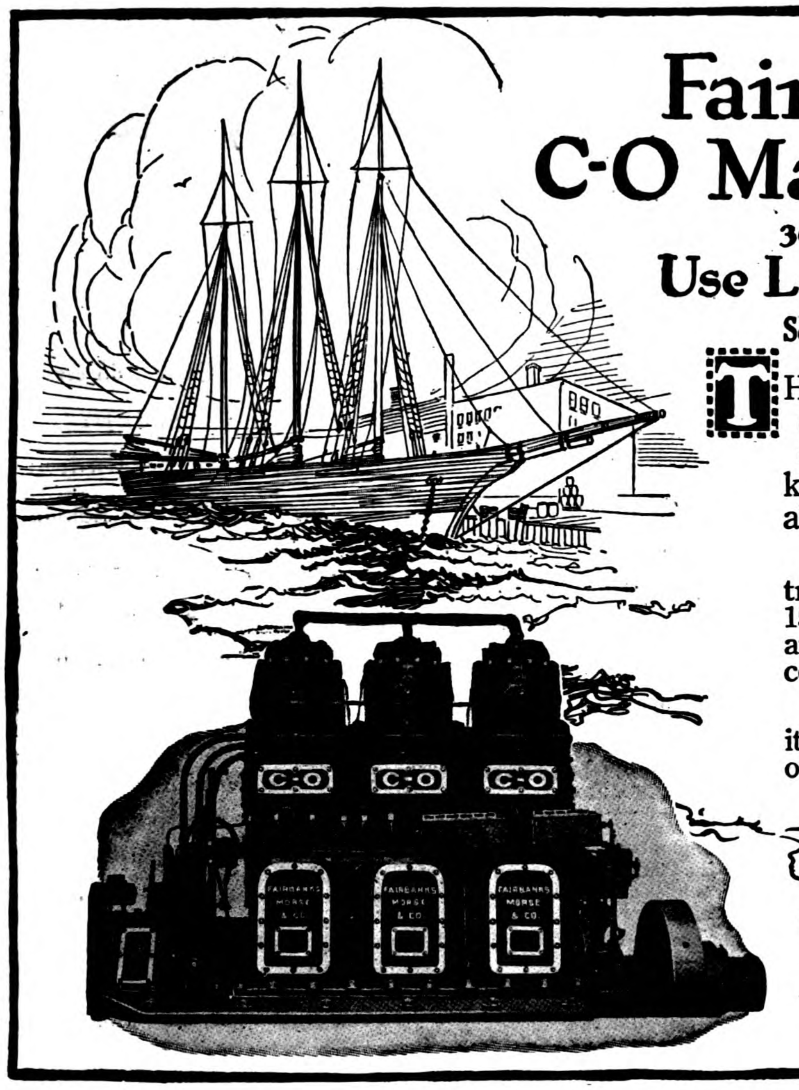

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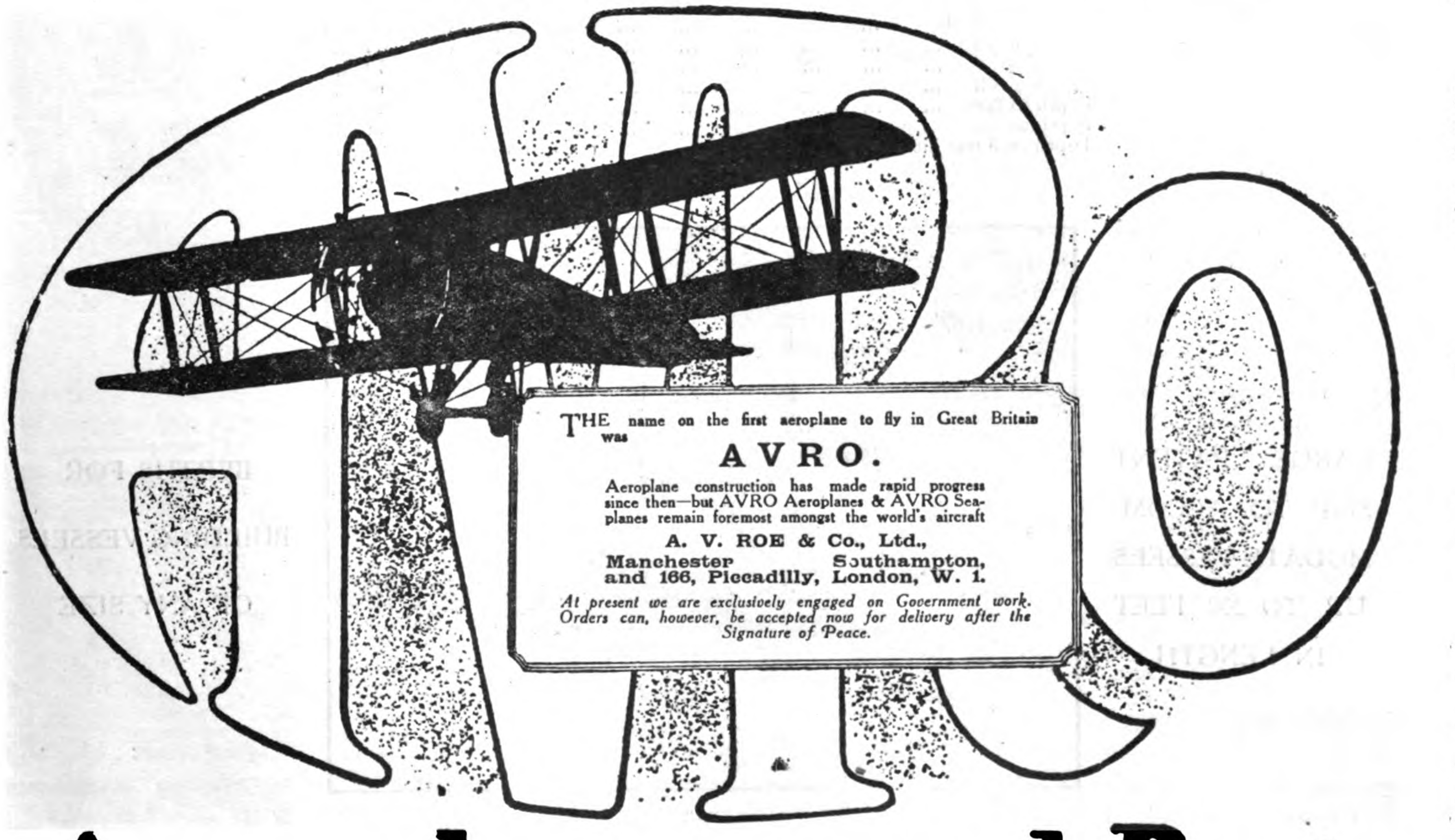

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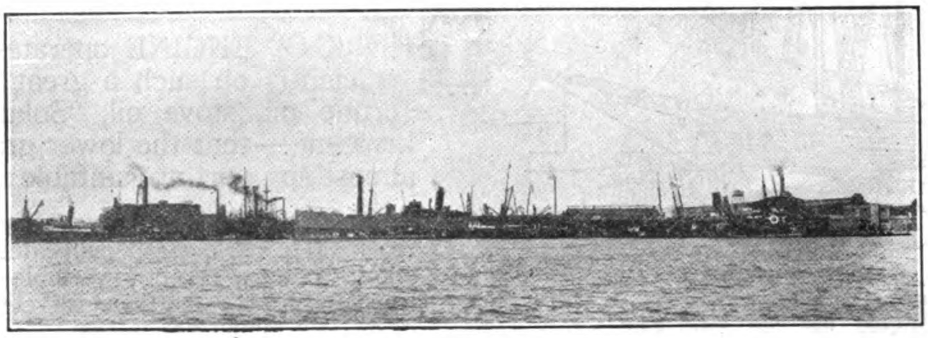

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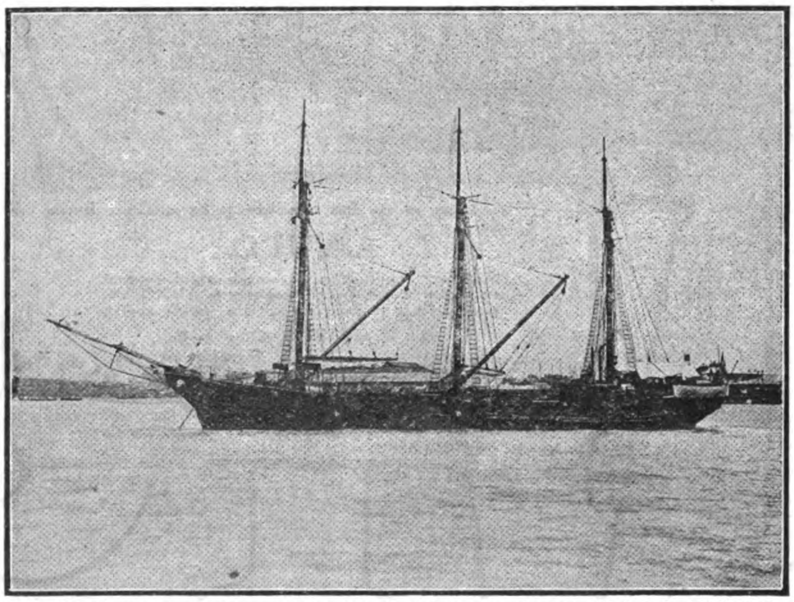

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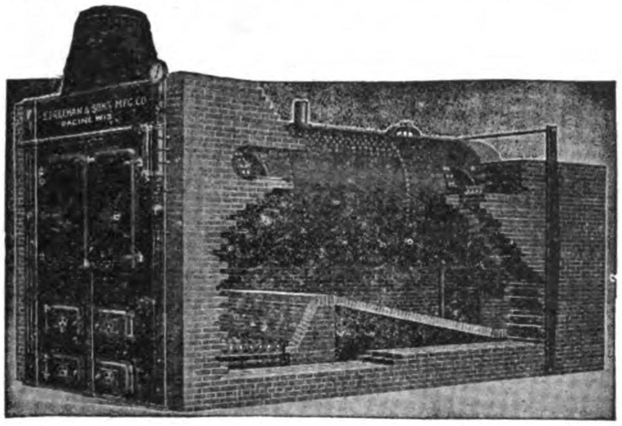

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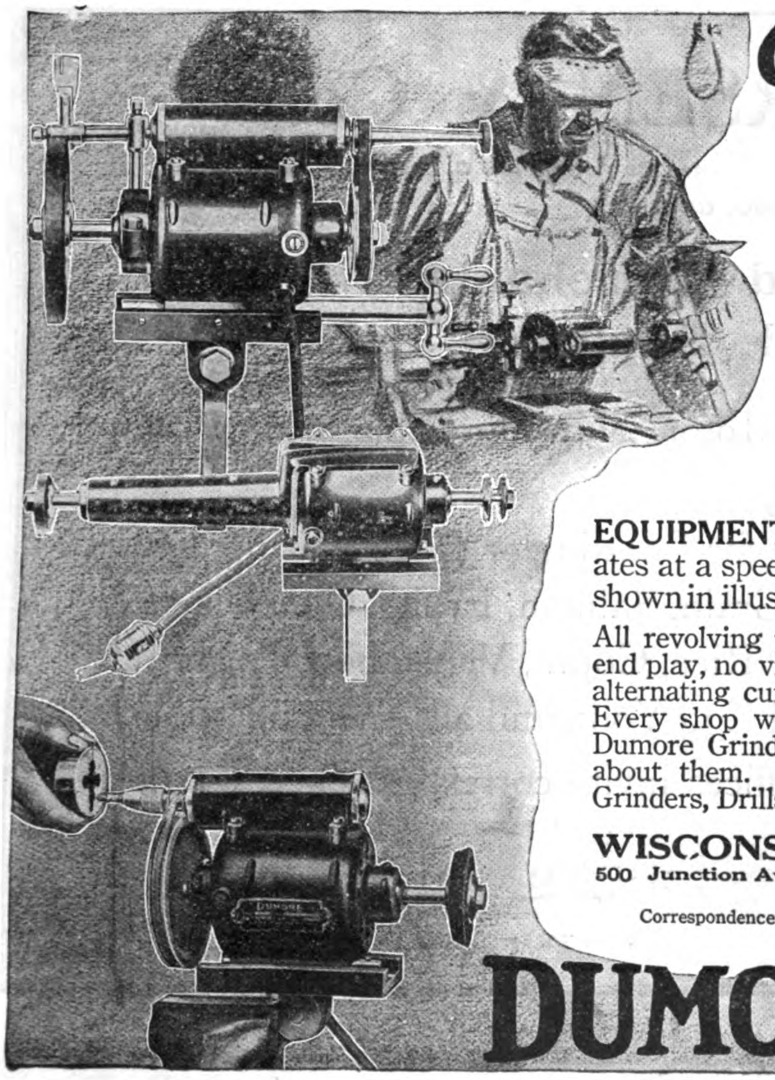

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All revolving parts of Dumore Equipments are dynamically balanced, no end play, no vibration. The universal Motor operates on either direct or alternating current and may be attached to any ordinary light socket. Every shop where there is grinding to be done needs Dumore Grinders. You will profit by learning more about them. Write today for literature on Dumore Grinders, Drills and other labor-saving devices.

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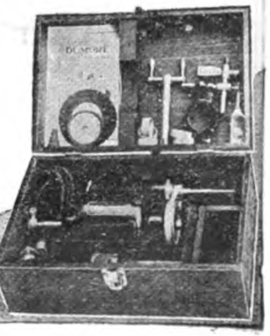
Cable Address "Dumore" Racine
Correspondence invited with responsible firms in view of representation.



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All-Steel Automatic
COALING STATIONS
for Railroad and Dock Service

PRACTICAL study of the features essential to efficient coaling service for railroad and dock has enabled the Chicago Bridge & Iron Works to produce this highly perfected all-steel structure. Actual service has proven its superiority over wooden structures. Its steel chutes are known for their durability and satisfactory operation. Write for full particulars.

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Immediate Deliveries

We are ideally located and equipped to handle with greatest dispatch orders for all parts of the world.

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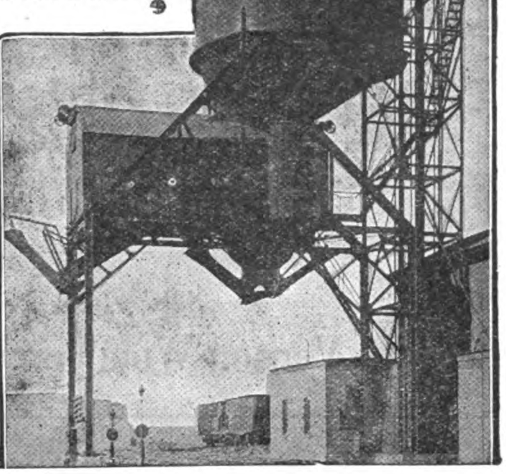

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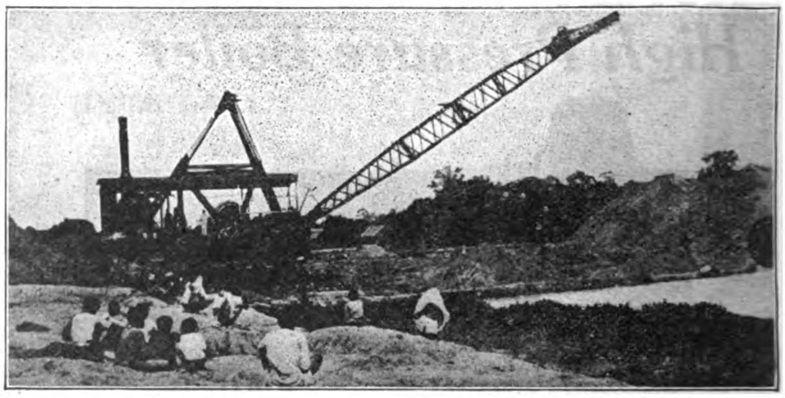
Branch Offices: New York and San Francisco, U.S.A.

Factories: Greenville, Pa. (Steel Center of U.S.A.) Chicago, Ill., U. S. A., and Bridgeburg, Ontario, Can.

Responsible firms are invited to communicate with us in view of representing our interests in

BUCYRUS
DRAGLINE EXCAVATORS



Class 175-B one of the three dragline excavators working on large irrigation system for Siamese Government

Bucyrus dragline excavators are in use for digging, drainage and irrigation canals; stripping overburden from ore deposits, mining, loading sand and gravel in all parts of the world. Among our installations are: Fushion Collieries, Manchuria; Kano Nigeria Tin Areas, Ltd., Africa; Russian Ministry of Agriculture, Turkestan Siberia; DuPont Nitrate Co., Talal, Chile; Chirabad Co., Ltd., Central Asia; Lloyds Ironstone Co., England.

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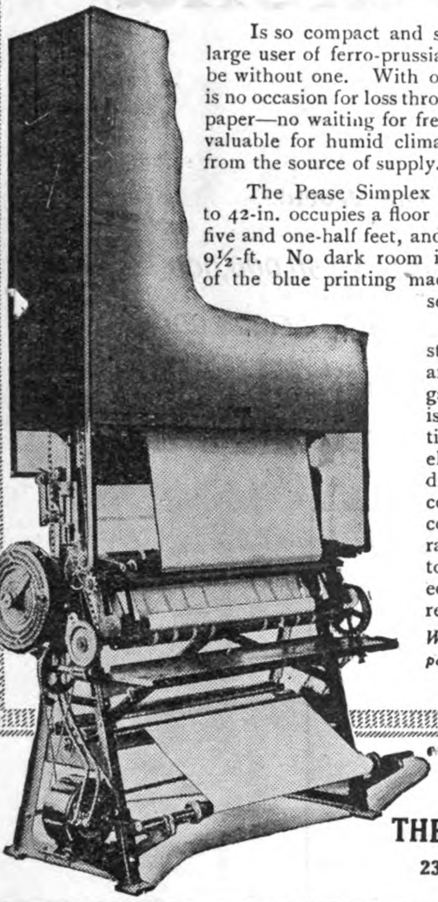

Is so compact and simple in operation that no large user of ferro-prussiate paper and cloth should be without one. With one of these machines there is no occasion for loss through deterioration or spoiled paper—no waiting for fresh supply. It is especially valuable for humid climates and for places distant from the source of supply.

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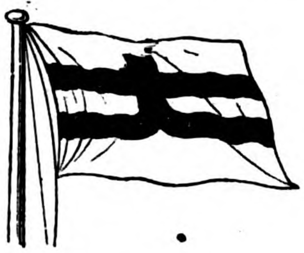

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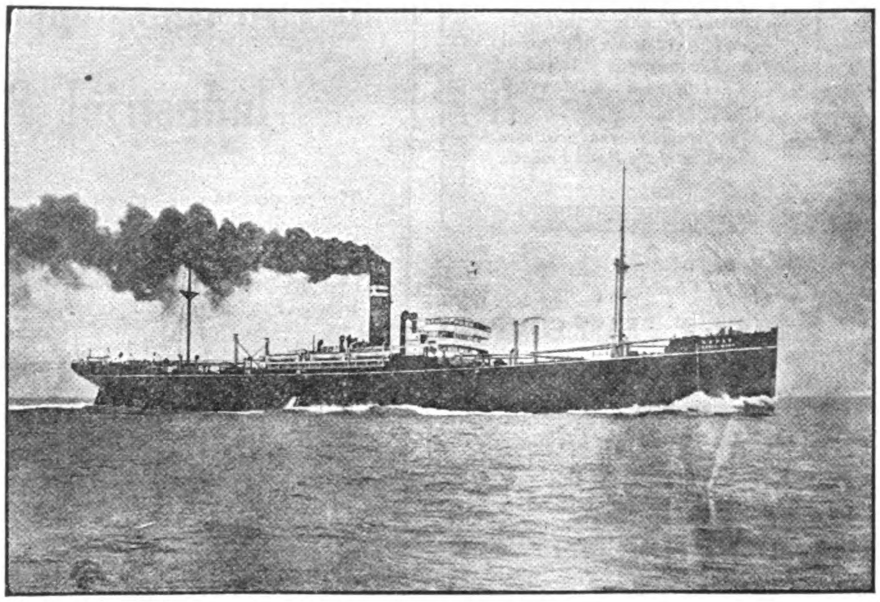

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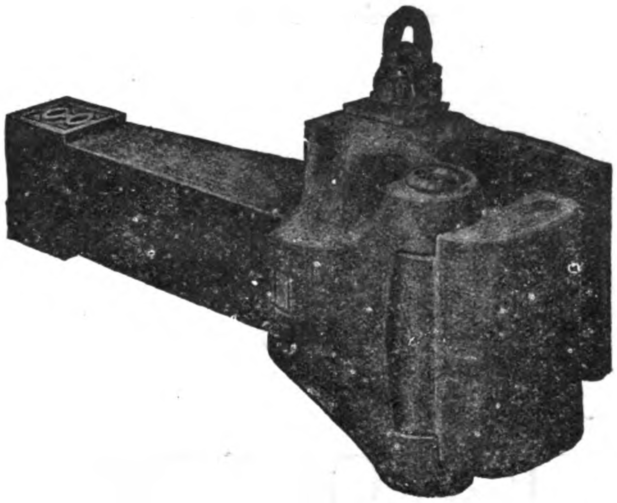

THE latest development of the Janney type of M. C. B. Coupling originally introduced and promoted by this company. This coupler has all the simplicity of the early type of the Janney coupler, and also has the up-to-date features of a "Lock-to-the-Lock," "Lock-Set," and a "Knuckle-Opener," and complies fully with all the requirements and recommendations of the M.C.B. Association of the U.S.A.

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Lock-Set—Lock setting is accomplished by the locking block resting on a seat on the inside wall of the coupler head when raised to the uncoupling position, from which seat it is dislodged on the closing movement of the knuckle in the act of coupling.

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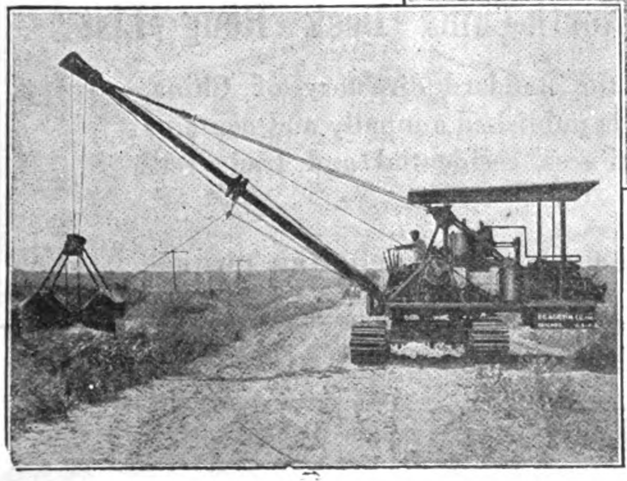

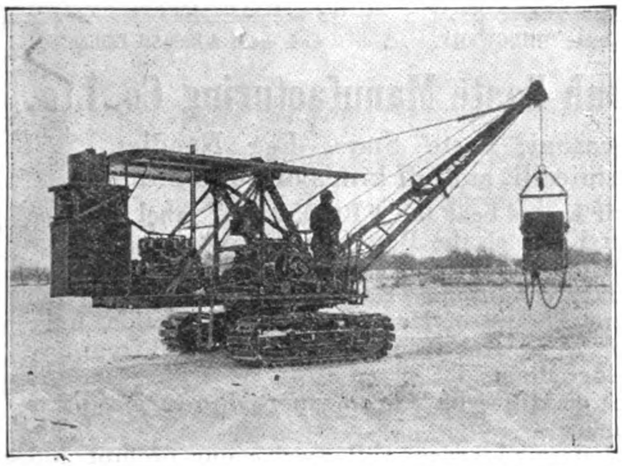

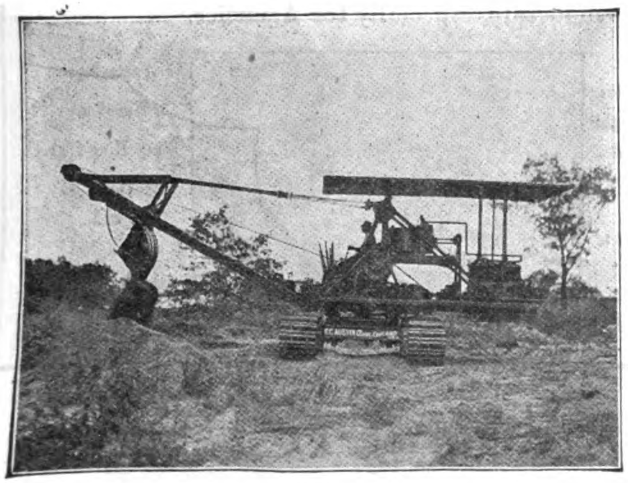

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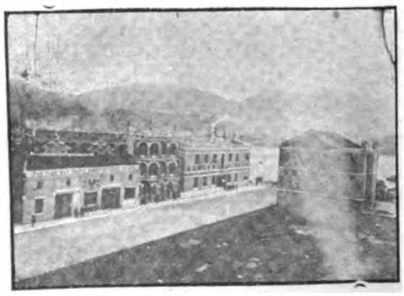

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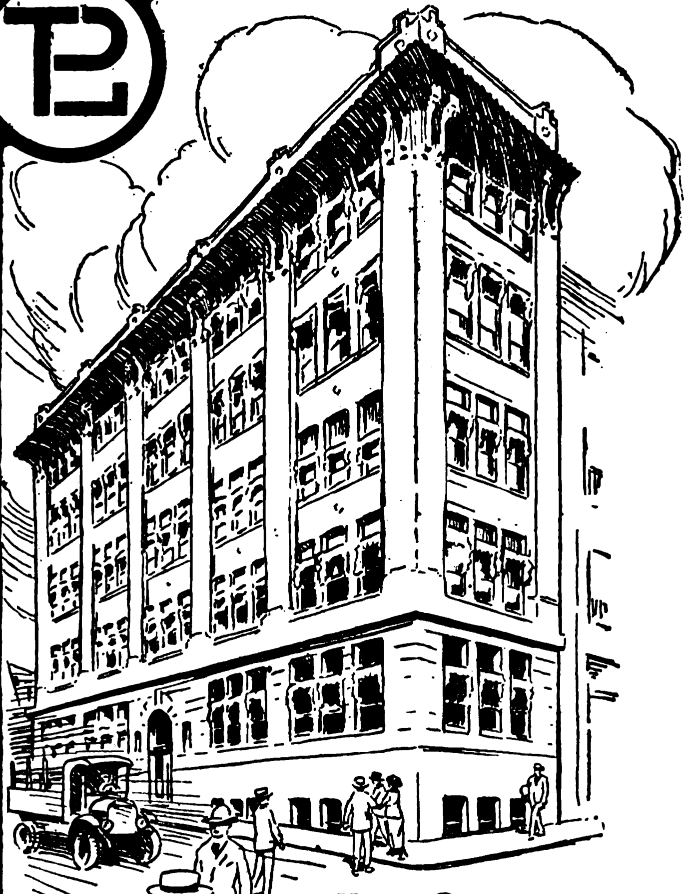

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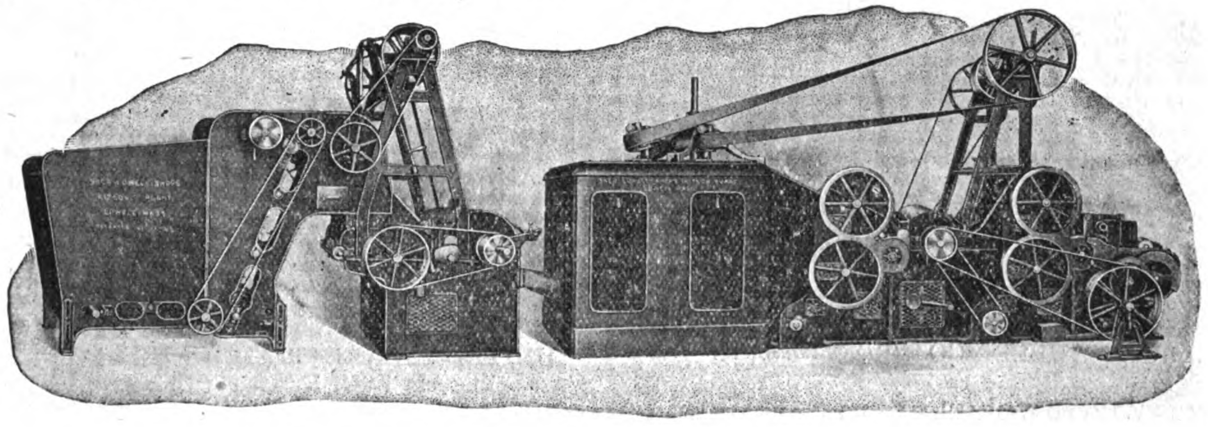

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MARCH, 1920 VOL. XVI. No. 3

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ENGINEERING FINANCE COMMERCE

遠東時報

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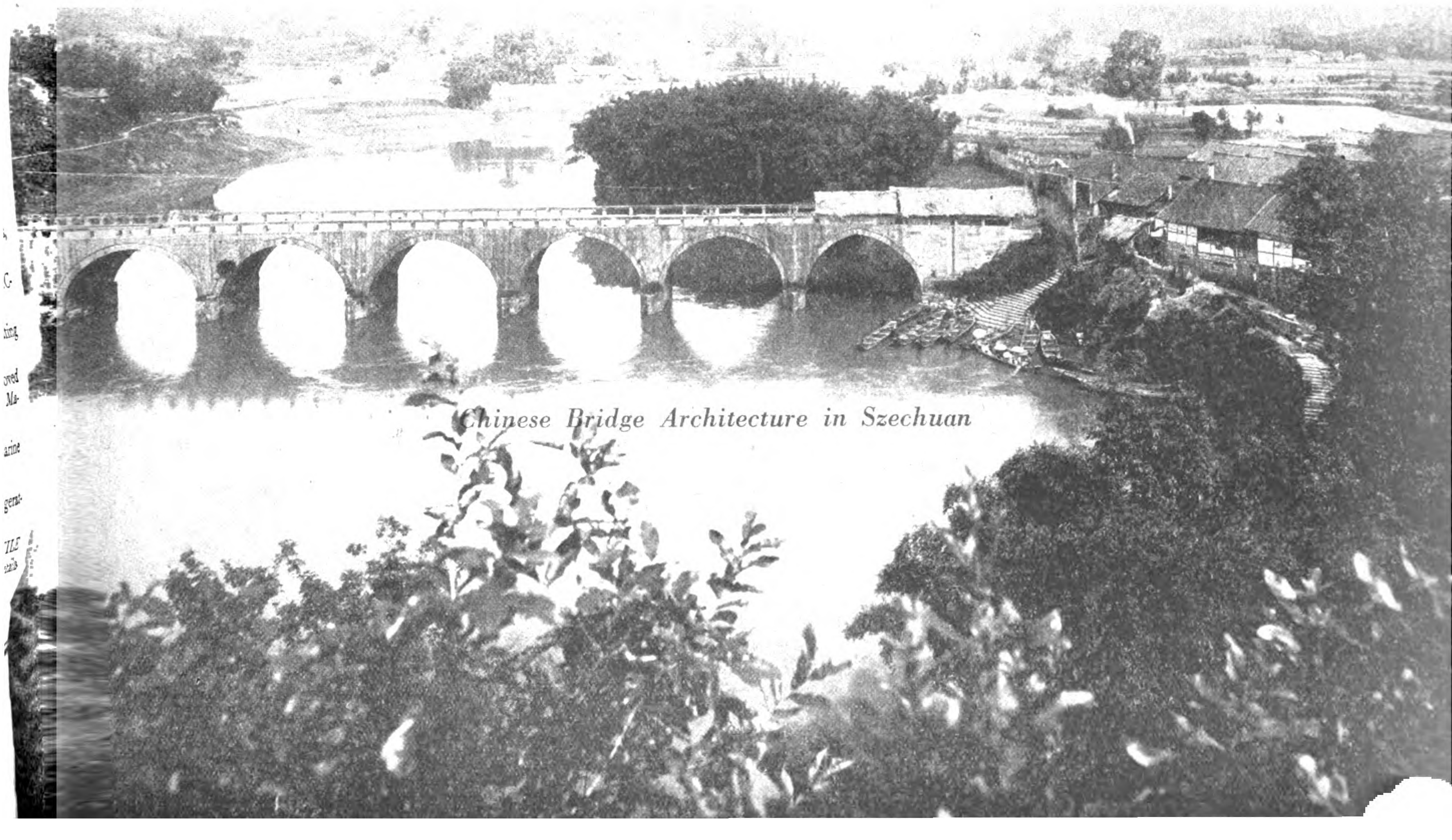

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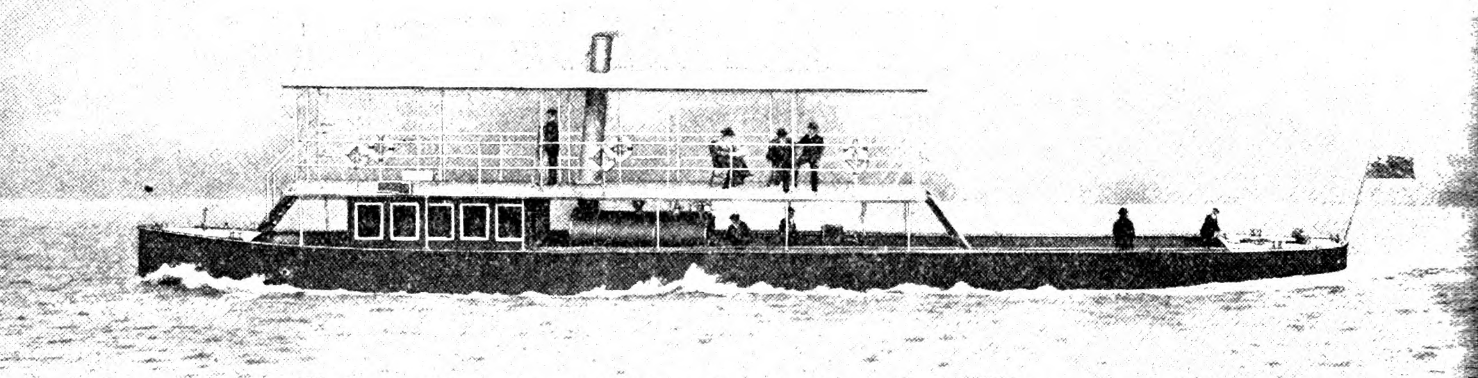

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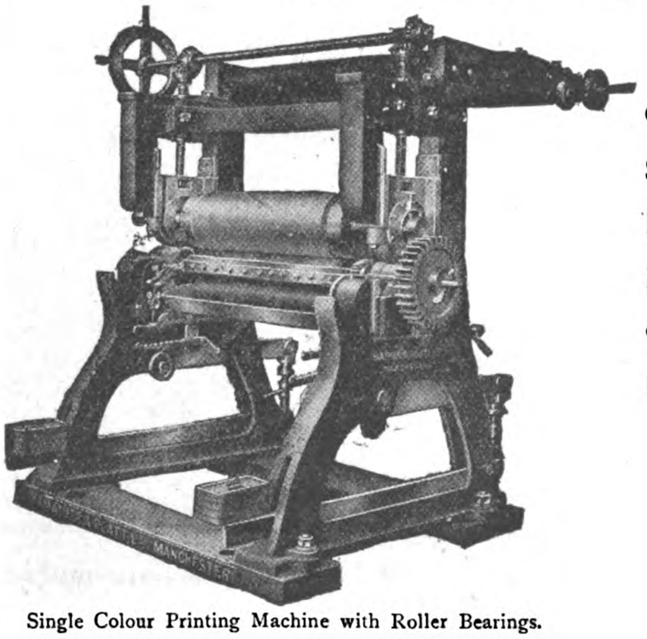

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THE PHILIPPINES

Historical.

Early Philippine history fades away into the history of Chinese foreign adventure and commerce, trading having been carried on between the two countries for a thousand years prior to the Spanish conquest.

Magallanes discovered the Philippines in 1521, about 100 years before the Pilgrim Fathers landed at Plymouth Rock. Spaniards settled Cebu, 1568. Legaspi occupied Manila, 1570. British captured Manila, 1762.

United States occupied Manila August 13, 1898. Treaty of Paris signed December 10, 1898. Filipino insurrection began February 4, 1899. First provincial government organized (Pampanga), February 6, 1901. First American Civil Governor, William H. Taft, July 1, 1901. Philippine Act passed July 1, 1902. Jones Act passed August 29, 1916.

Geography.

The Philippine Archipelago extends from the Batanes Islands in the north to the Tawitawi group at the southern end of the Sulu islands, a distance of 1,152 miles. The archipelago is composed of 3,141 islands, of which 400 are inhabited.

Area of Archipelago.

	Square miles.
Total area, land and water	832,968
Land	127,825
Water	705,115

Comparative Areas.

	Square miles.
Philippines	127,853
British Isles	120,973
New York, New Jersey, Pennsylvania, and Delaware	104,970
Japan	147,649

Luzon islands is as large as Denmark, Belgium, and Holland combined. Mindanao is about equal in area to Portugal.

Distribution of Area.

	Square miles.
Forest land	72,000
Commercial forest	61,000
Cultivated	14,000
Grass lands	20,000
Unexplored	14,000

Forest lands contain some 747 native tree species; 50 to the acre in some parts. Mindanao has 423 varieties. Over 200 varieties come to the Manila market. One-half of the forest land is virgin.

Cultivated Land.

	Acres.
Rice	3,000,000
Hemp	1,236,000
Coconuts	680,000
Corn	1,070,000
Tobacco	145,000
Sugar	445,000
Maguey	76,000
Cacao	2,600
Coffee	2,000

Comparative Cultivation.

Japan and the Philippines: Japan with 14,000,000 acres of arable land produces crops to the value of Ps.2,000,000,000. Philippines with 7,000,000 acres produces only Ps. 200,000,000.

Population.

Total from latest (1917-18) Philippine Health Service records: 9,500,000.

Christians	8,730,000
Mohammedans	275,000
Non-Christians and Pagans	595,000

Japanese	42,800,000

Progress of Population.

1735	837,182
1805	1,741,234
1826	2,593,287
1840	3,096,031
1862	4,734,533
1887	5,984,727
1896	6,261,339
1917-18	9,500,000

Climate.

Average temperature for 30 years: 80° Fahrenheit.

Dry temperate months: November, December, January, and February.

Intermediate months: March, July, August, September, October.

Hot months: May and June.

Rainfall.

Maximum days of rain in July, August, September.

Minimum days of rain in February and March.

Dry season: November to May, inclusive.

Wet season: June to October, inclusive.

Typhoons: Frequent in July, August, September, and October.

Mountains.

	Feet.
Apo	10,312
Pulog	9,450
Mayon	8,970
Halcon	8,865
Malindang	8,197
Canlaon	8,192
Ste. Tomas	7,418
Data	7,364
Banajao	7,382
Pagsan	7,339
Isarog	6,450
Pinalobo	6,137
Cristobál	5,288
Bulusan	5,100
Maquiling	4,783
Arayat	3,564
Talim	1,519
Taal	1,050

There are 50 volcanoes in the archipelago, of which 20 are active and 30 are extinct.

The principal active volcanoes are Taal, Canloan, and Apo.

The principal extinct volcanoes are Talim, Maquiling, Cristobal, Banajao, and Isarog.

Rivers.

	Miles
Grande de Pampanga	220
Pulangi, Mindanao	300

Other rivers of importance are the Agno Grande, Grande de Pampanga, Agusan, and Pasig.

Mindoro has 60 rivers and Samar 26, none of them of commercial value.

Real Estate Values.

[1 peso = $0.50].

Manila	Ps.104,024,000
Provinces	392,180,000

Mortality (Americans and Europeans) per 1,000 (1917-18).

Manila	8.0
New York	16.5
San Francisco	15.0
Chicago	14.0
Glasgow	18.0
Belfast	22.0

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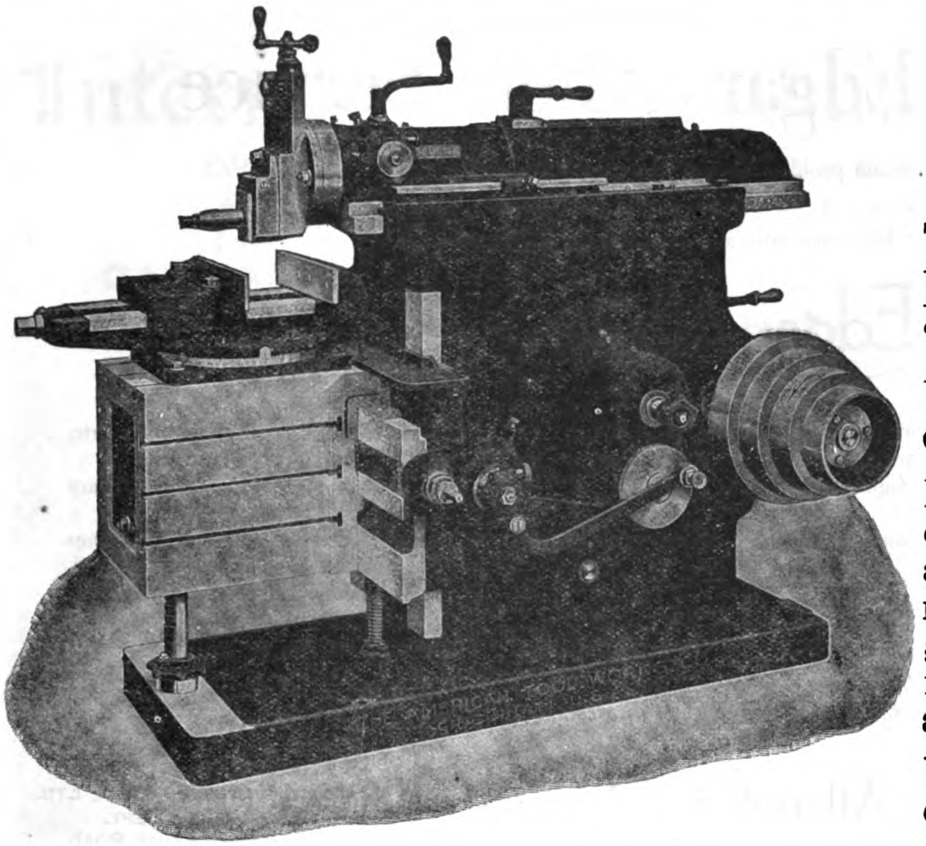

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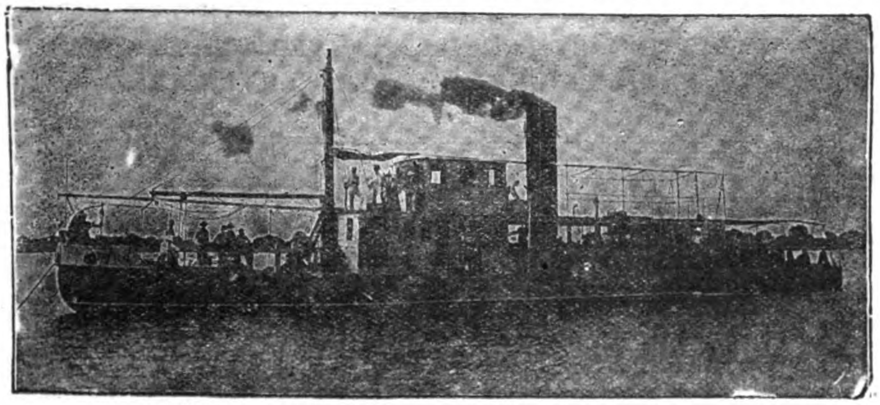

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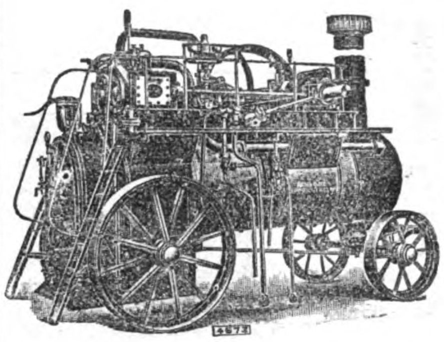

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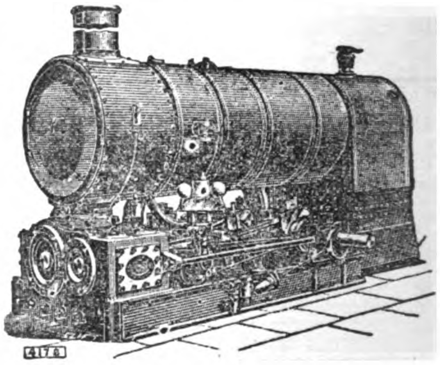

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THE BANK OF TAIWAN, LTD.

Incorporated by Special Imperial Charter, 1899.

CAPITAL SUBSCRIBED	**Yen 30,000,000**
CAPITAL PAID-UP	**„ 22,500,000**
RESERVE FUNDS	**„ 6,580,000**

President: TETSUTARO SAKURAI, Esq. **Vice-President:** KOJURO NAKAGAWA, Esq.

Directors:

IYETOSHI SADA, Esq. KYOROKU YAMANARI, Esq. SHINGO MINAMI, Esq.

Head Office: TAIPEH, FORMOSA (TAIWAN)

Branches:
- **JAPAN: Tokyo (General Manager's Office), Kobe, Osaka, Yokohama.**
- **TAIWAN: Keelung, Tainan, Takow, and 10 other points.**
- **CHINA: Amoy, Canton, Foochow, Hankow, Kiukiang, Shanghai, Swatow.**
- **OTHERS: Batavia, Bombay, Hongkong, London, New York, Semarang, Singapore, Soerabaya.**

AGENTS AND CORRESPONDENTS: In the Principal Cities and Towns throughout the World.

London Bankers:

London County Westminster and Parr's Bank, Ltd. Capital & Counties Bank, Ltd. London Provincial and South Western Bank, Ltd.

Tokyo Branch: No. 1 Eiraku-cho Ni-chome, Kojimachi-ku.

Telegraphic Address: "TAIWANGINK." Phone Nos. 5060, 5061, 5062, 5063, 5064, 5065, & 5066, Honkyoku.

Interest allowed on Fixed Deposits and Current Accounts on terms which may be ascertained on application. Most favourable terms are granted for Petty Current Accounts. Every description of Exchange and General Banking business transacted.

Special facilities for exchange business on China, Straits Settlements, East Indies, Australia, Great Britain, Russia, America, Canada, South Africa, etc.

K. YAMANARI, *General Manager.*

Hongkong and Shanghai Banking Corporation

Paid-up Capital	$15,000,000
Reserve Funds: Sterling	£1,500,000
Silver	$21,000,000
Reserve Liability of Proprietors	$15,000,000

Court of Directors:

J. A. PLUMMER, Esq.
Chairman

Hon. Mr. E. V. D. PARR,
Deputy Chairman

J. W. C. BONNAR, Esq.
A. H. COMPTON, Esq.
Hon. Mr. S. H. DODWELL
C. S. GUBBAY, Esq.
P. H. HOLYOAK, Esq.
Hon. Mr. J. JOHNSTONE
W. L. PATTENDEN, Esq.
ROSS THOMSON, Esq.

Head Office:
HONGKONG

Chief Manager:
HONGKONG . . N. J. STABB

London Bankers:
LONDON COUNTY WESTMINSTER AND PARR'S BANK LTD.

Shanghai Branch: 12 The Bund
Sub-Agency: 9 Broadway

Branches and Agencies:

AMOY, BANGKOK, BATAVIA, BOMBAY, CALCUTTA, CANTON, COLOMBO, FOOCHOW, HANKOW, HARBIN, ILOILO, IPOH, JOHORE, KOBE, KUALA LUMPUR, LONDON, LYONS, MALACCA, MANILA, NAGASAKI, NEW YORK, PEKING, PENANG, RANGOON, SAIGON, S. FRANCISCO, SHANGHAI, SINGAPORE, SOURABAYA, TIENTSIN, TSINGTAO, VLADIVOSTOCK, YOKOHAMA

Interest allowed on Current Accounts and on Fixed Deposits according to arrangement.

Local Bills Discounted. Credits granted on approved Securities and every description of Banking and Exchange business transacted. Drafts granted on London and the chief commercial places in Europe, India, Australia, Africa, China, Japan and America.

A. G. STEPHEN, *Manager.*

Banque Industrielle de Chine

CAPITAL............Francs 75,000,000, one-third of the Capital, i.e., Frs. 25,000,000, subscribed by
THE GOVERNMENT OF THE CHINESE REPUBLIC
Statutes approved by the Government of the Chinese Republic on January 11, 1913.

President: ANDRE BERTHELLOT.
General Manager: A. J. PERNOTTE.

HEAD OFFICE:
74 RUE ST. LAZARE, PARIS.

Branches in Peking, Tientsin, Shanghai, Hongkong, Canton, Foochow, Saigon, Haiphong and Yunanfou

Bankers:

In France: Societe Generalle pour Favoriser le Development du Commerce et de l'Industrie en France.
In London: London City & Midland Bank Ltd.
In New York: Redmond & Co.
In Italy: Banca Commerciale Italiana Credito Italiano

Taels, Dollars, Gold Accounts

Interest allowed on Current Accounts in Gold or Local Currency and fixed deposits on application.
Every description of Banking and Exchange business transacted.
Savings accounts in Gold and Local Currency.

RUSSO-ASIATIC BANK

CAPITAL (fully paid)	Roubles 55,000,000
RESERVE FUND	,, 26,960,000
Capital contributed by the Chinese Government ...	Kuping Tls. 3,500,000
Reserve Fund	,, 1,750,000

Head Office: PETROGRAD
Paris Office: 9 RUE BOUDREAU
London Office: 64 OLD BROAD STREET, E.C. 2.

Bankers:

LONDON: Messrs. Glyn, Mills, Currie & Co.
PARIS: Société Générale pour favoriser le développement du Commerce et de l'Industrie en France.
Banque de Paris et des Pays-Bas.
LYONS: Société Générale pour favoriser le développement du Commerce et de l'Industrie en France.
MILAN: Credito Italiano.

Far Eastern Branches:

BOMBAY, CHANGCHUN (KWANCHENZE), CHEFOO, DAIREN (DALNY), HAILAR, HANKOW, HARBIN, HONGKONG, MANCHOULI, NEWCHWANG, NICOLAYEWSK o/AMUR, PEKING, SHANGHAI, TIENTSIN, VLADIVOSTOCK, YOKOHAMA

Branches and Agencies in Russia, Siberia and Mongolia.

Shanghai Branch:

Interest allowed on Current Accounts and Fixed Deposits in Taels, Dollars and Roubles. Terms on application.
Local Bills discounted. Special facilities for Russian Exchange.
Foreign Exchange on the principal cities of the world bought and sold.

SAFE DEPOSIT BOXES.

L. JEZIERSKI, G. CARRÈRE, *Managers for Asia.*

BANK OF COMMUNICATIONS

(Specially authorised by Presidential Mandates of April 7th, 1914 and October 31st, 1915 making the Bank of Communications a National Bank).

Head Office: Peking

CAPITAL . . Kuping Tls. 10,000,000

President: TSAO JOU LIN

Vice-President: JEN FUNG PAO

Every description of Banking and Exchange business transacted.
Interest allowed on Current Accounts and Fixed Deposits according to arrangement.
Credits granted on approved Securities.
Special Facilities for Transfers to all parts of China.

Branches

CHIHLI PROVINCE.—Peking, Tientsin, Tungchow, Paotingfu, Haitien, Tangshan, Shuntefu, Shengfang.

SHANTUNG PROVINCE.—Tsinanfu, Tsininchow, Chefoo, Techow, Tsaochwang, Lungkow.

HONAN PROVINCE.—Kaifeng, Lohyang, Chengchow, Chiaotso, Chowchiakow, Taokow, Leiho, Hsinhsiang, Changtefu, Hsinyangchow.

SHANSI PROVINCE.—Shihchiachwang, Tatungfu, Fengcheng, Yangkao.

KIANGSU PROVINCE.—Shanghai, Soochow, Wusieh, Chinkiang, Yangchow, Tsing-kiangpu, Pukow, Penpu, Hsuchow.

CHEKIANG PROVINCE.—Hangchow, Ningpo.

HUPEH PROVINCE.—Hankow, Shasi, Ichang.

KIANGSI PROVINCE.—Kiukiang.

HUNAN PROVINCE.—Changsha, Changteh, Yochow, Hengchow, Hsiangtan.

SZECHUAN PROVINCE.—Chungking.

ANHWEI PROVINCE.—Wuhu, Anking, Hsuancheng, Panpu.

KWANGTUNG PROVINCE.—Canton.

THREE EASTERN PROVINCES.—Yinkow, Fengtien, Changchun, Kirin, Tiehling, Sunchiatai, Liaoyang, Harbin, Chinhsien.

SPECIAL DISTRICTS.—Jehol, Kueihuacheng, Lenghsien, Chihfeng, Hsinsi, Kalgan (Chahar).

ABROAD.—Hongkong, Singapore.

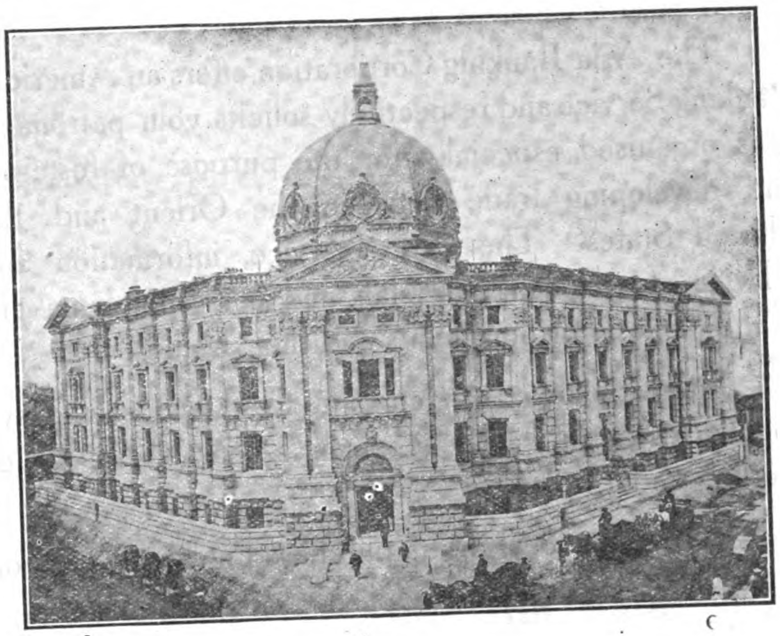
The Yokohama Specie Bank, Limited

Capital subscribed . . Yen 100,000,000. Capital paid-up . . Yen 61,000,000. Reserve Fund . . Yen 28,000,000

President:
N. KAJIWARA, Esq.

Vice-President:
S. K. SUZUKI, Esq.

Directors:
N. Kajiwara, Esq.
N. Soma, Esq.
Y. Yamakawa, Esq.
M. Odagiri, Esq.
Baron K. Iwasaki.
K. Tatsumi, Esq.
S. K. Suzuki, Esq.
F. Watanabe, Esq.
I. Matsukata, Esq.
M. Mitsui, Esq.
K. Morimura, Esq.
R. Ichinomiya, Esq.
K. Kodama, Esq.
T. Takeuchi, Esq.



General Manager:
S. K. Suzuki, Esq.

HEAD OFFICE, YOKOHAMA

Manager:
Taro Hodsumi, Esq.

SHANGHAI BRANCH

31 The Bund.

Director and Manager:
K. Kodama, Esq.

BRANCHES AND AGENCIES

Batavia
Bombay
Buenos Aires
Calcutta
Changchun
Chinan Fu
Dairen
Fengtien
Hankow
Harbin
Hongkong
Honolulu
Kaiyuang
Kobe
London
Los Angeles (sub-office of San Francisco Branch)
Lyons
Manila
Nagasaki
Newchwang
New York
Osaka
Peking
Rangoon
Rio de Janeiro
San Francisco
Seattle
Shanghai
Shimonoseki
Singapore
Soerabaya
Sydney
Tientsin
Tsingtau
Tsinan
Vladivostock

Correspondents at all the Chief Commercial Cities in the World.

LONDON BANKERS:

LONDON COUNTY WESTMINSTER & PARR'S BANK LTD.
LONDON PROVINCIAL & UNION BANK OF ENGLAND LTD.
LONDON JOINT STOCK BANK LTD.

Interest allowed on Current Accounts and Fixed Deposits on terms to be ascertained on application.
Every description of Banking business transacted. For particulars, apply to the Managers.

Asia Banking Corporation

An American Bank

The Asia Banking Corporation offers an American Banking Service and respectfully solicits your patronage. It is organised especially for the purpose of fostering and developing trade between the Orient and the United States. The entire service, information and TIME of our bank, its staff and correspondents are at the disposal of our clients and their friends.

Interest allowed on current, fixed and saving accounts carried in Taels, Mexican Dollars, U.S. Gold, Sterling and Francs.

Foreign or local drafts purchased at best rates, or entered for collection.

Imports and exports financed.

Drafts sold on, and telegraphic payment effected in, any part of the World.

Head Office: New York City
Head Office for Far East: Shanghai

Other Branch Offices at Canton, Changsha, Hankow, Hongkong, Manila, Peking, Tientsin.

PARK-UNION

FOREIGN BANKING CORPORATION

HEAD OFFICE: 56 Wall Street, New York

Fully Paid Capital and Surplus $2,250,000

Owned and Controlled by

The National Park Bank, New York

Union Bank of Canada

Directors:

Richard Delafield	H. B. Shaw
Stuyvesant Fish	R. O. McCulloch
Gilbert G. Thorne	Stanley E. Elkin
Cornelius Vanderbilt	Stephen Haas
R. H. Williams	F. E. Kenaston
E. C. Hoyt	W. J. Dawson
A. P. Villa	F. L. Appleby
Sir Wm. Price	T. Fred Aspden

Charles A. Holder, *President*

Branches:

SAN FRANCISCO SEATTLE
PARIS TOKYO YOKOHAMA

Shanghai Branch:

No. 1 KIUKIANG ROAD

Telephone Central 1174

THE ROYAL BANK OF CANADA

HEAD OFFICE, MONTREAL.

LONDON, ENG. Princes Street, E.C.

NEW YORK. 68, William Street.

BARCELONA. Plaza de Cataluna 6.

Collections made. Drafts sold. Bills of Exchange purchased. Trade Enquiries effected.

533 BRANCHES IN CANADA & NEWFOUNDLAND, ALSO 67 FOREIGN BRANCHES.

CUBA—Havana (5 Branches), Antilla, Banes, Bayamo, Caibarien, Camaguey, Camajuani, Cardenas, Ciego de Avila, Cienfuegos, Cueto, Florida, Guantanamo, Jatibonico, La Maya, Manzanillo, Matanzas, Moron, Nuevitas, Palma Soriano, Pinar del Rio, Puerto Padre, Sagua la Grande, Sancti Spiritus, Santa Clara and Santiago de Cuba.
PORTO RICO—San Juan, Mayaguez and Ponce. COSTA RICA—San José.
DOMINICAN REPUBLIC—S. Domingo, Puerto Plata, Sanchez, S. Pedro de Macoris and Santiago de los Caballeros. MARTINIQUE—Fort de France.
GUADELOUPE—Pointe-à-Pitre and Basse Terre.
VENEZUELA—Caracas, Ciudad Bolivar, Maracaibo and Puerto Cabello

BRITISH WEST INDIES.

Antigua—St. John's.
Bahamas—Nassau.
Barbados—Bridgetown & Speightstown.
Dominica—Roseau.
Grenada—St. George's.
Jamaica—Kingston.
Montserrat—Plymouth.
Nevis—Charlestown.
St. Kitts—Basseterre.
Tobago—Scarborough.
Trinidad—Port of Spain and San Fernando.

BRITISH GUIANA—Georgetown, New Amsterdam and Rose Hall (Corentyne).
BRITISH HONDURAS—Belize.

Affiliated in France:
THE ROYAL BANK OF CANADA (FRANCE), 28, Rue du Quatre-Septembre, PARIS.

Correspondents in Canada and West Indies for the HONG KONG AND SHANGHAI BANKING CORPORATION.

Capital Paid up and Reserves - $33,000,000.
Total Resources - - - - - $470,000,000.

THE BANK OF EAST ASIA, LTD.

HEAD OFFICE: HONGKONG (2 Queen's Road Central).

Paid-up Capital - $2,000,000.00

DIRECTORS: 董事局

Pong Wai Ting, *Chairman.* 龐偉廷

Chow Shou Son	周壽臣	Mok Ching Kong	莫晴江
Kan Ying Po	簡英甫	Chan Ching Shek	陳澄石
Li Koon Chun	李冠春	Wong Yun Tong	黃潤棠
Chan Kai Ming	陳啓明	Fung Ping Shan	馮平山
Ng Chang Luk	吳增祿	P. K. Kwok	郭幼廷

Kan Tong Po, *Chief Manager.* 簡東浦
Li Tse Fong, *Asst. Manager.* 李子方

A Bank of Character, Strength, Efficiency & Service.
We offer every facility consistent with sound Banking.

Interest allowed on Current Account at 2 per cent. per annum, and on Fixed Deposits at the following rates:—

For 3 months @ 3% per annum
„ 6 „ 4% „
„ 12 „ 5% „

KAN TONG PO, *Chief Manager.*

GASTON, WILLIAMS & WIGMORE,

FAR EASTERN DIVISION, INC.,

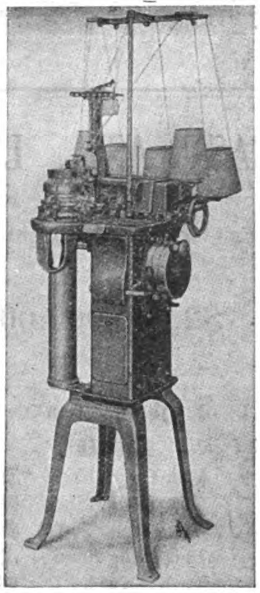
Cable Address **SHANGHAI** **Gastonorge**

IMPORTERS EXPORTERS ENGINEERS CONTRACTORS

Head Office: 39 BROADWAY, NEW YORK

AMERICAN HOIST & DERRICK CO. Builders Hoists, Elevators and Derricks, Railroad Ditchers and Railroad Construction Equipment.	BOWERS RUBBER WORKS. Belting, Packing, Steam Hose, Mill Hose, etc.
BRADFORD BELTING CO. Leather Belting.	H. BRINTON COMPANY Superior Knitting Machinery.
LANSTON MONOTYPE CORP. Type Composing, Type Casting and Lead, and Rule Casting Machine.	NORTH-WESTERN EXPANDED METAL CO. Expanded metal for reinforced concrete construction.
MILLER, DUBRUL & PETERS MFG. CO. High capacity Cigarette and Tobacco Machinery.	TOCH BROS. Damp resisting and anti-corrosive paints. WHITIN MACHINE WORKS. America's Best Cotton Machinery.

And a long list of other equally prominent manufacturers whose products are required in the Industrial Development of China.



HOSIERY AND UNDERWEAR MANUFACTURERS

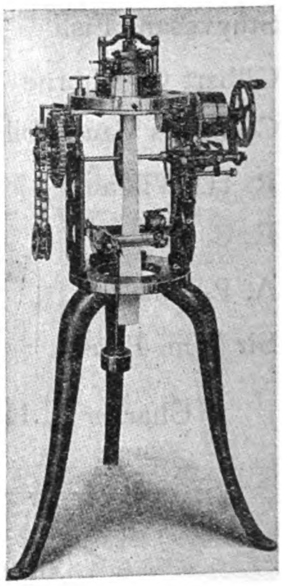
are invited to inspect our exhibit of

BRINTON AUTOMATIC SEAMLESS KNITTING MACHINES

SPECIAL FEATURES

Socks manufactured with our machinery have REAL RIBBED TOPS, EXCLUSIVE FRENCH WELT, TIGHT ANKLE, HIGH SPLICE, DOUBLE SOLE and PERFECT PLATING.

More production than any other machine making the same style of goods.



American needles and spares always carried in stock. Instructions given. Inquiries solicited.

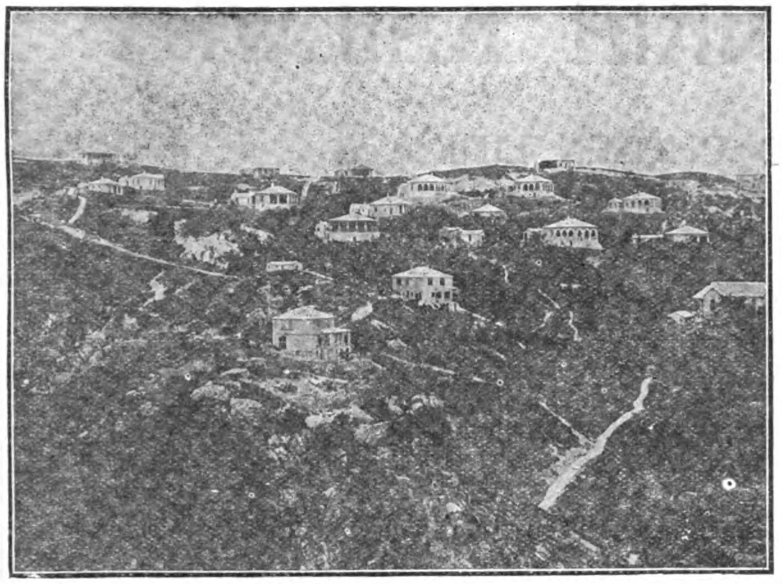
GASTON, WILLIAMS & WIGMORE, ELECTRICAL ENGINEERING CORPORATION

China Agents for

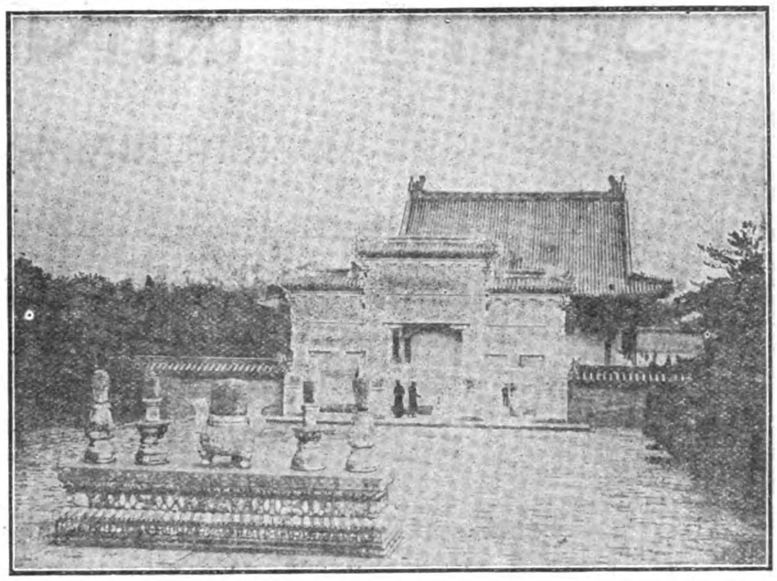
WESTINGHOUSE ELECTRIC EXPORT COMPANY

Complete Electrical and Steam Equipments for all purposes. "The name Westinghouse is a Guarantee."

CHINESE GOVERNMENT RAILWAYS



SUMMER RESORT AT CHI KUNG SHAN



TOMB OF EMPEROR YU CHENG NEAR LIANG KOW CHWANG

PEKING-HANKOW LINE

"The Road Through The Heart of China"

THE Peking-Hankow Line, the most important section of China's overland route, enables tourists and travellers to get a glimpse of Old China, the train passing through magnificent scenery, traversing the great plains of Chihli, the central portion of Honan and the mountainous regions of the eastern Hupeh province.

The Peking-Hankow route joins at Fengtai the main line of the Peking-Mukden Railway, by means of which this line is connected with the railways in Manchuria, Korea, Japan, and Siberia, while steamer facilities at Hankow bring it into easy communications with the Yangtze River ports and Shanghai.

From the Capital to Hankow the journey occupies 34 hours, by the daily through train which is provided with up-to-date sleeping and dining accommodations.

Chikungshan Mountain (Summer Resort).—Not many Summer Resorts in China inland, can bear comparison with the natural charming views, that reward those who ascend the mountain of Chikungshan, whose summit stands at an altitude of 1,980 ft. On reaching Sintien station, situated 110 miles from Hankow, a serpentine road climbs the mountain, on top of which are hundreds of beautiful bungalows awaiting vacationists. This popular resort is celebrated for its scenery, where an almost unbroken communion with nature can be enjoyed for a week at a time.

Hsi-ling or Western Imperial Tombs.— With their present-day accessibility, there is now little excuse for visitors to Peking omitting a trip to the Western Imperial Tombs, undoubtedly one of the most impressive sights in China. The site of these beautifully adorned Imperial Tombs is close to Liang Ko Chwang station, 79 miles from Peking, which is reached by a Branch-line, formerly built for the exclusive use of the Imperial Sovereigns when visiting the Tombs of their ancestors. The Western Tombs include the mausoleums of four Manchu Emperors and three Empresses, as well as those of a number of Princesses. The region, as a well laid-out park, closely wooded, is justly appreciated for the charming scenery surrounding the Imperial Tombs and is highly recommended to any one in search of the extraordinary and beautiful.

For Particulars, Pamphlets, Tickets, etc., apply to the "Information Bureau" at Peking Head Office or to Tourist Agencies.

SOUTH MANCHURIA RAILWAY

MANCHURIA AND CHOSEN LINES

Circular and Overland Trips at Greatly Reduced Rates

TOURIST TRAVEL OFF THE BEATEN TRACK

Tourists in the Far East should not miss Manchuria. Through Japan, Chosen (Korea), and Manchuria (or vice versâ) is an ideal trip, combining the distinctive characteristics of three unique and profoundly interesting countries.

The Chosen and Manchuria Lines are under the management of the South Manchuria Railway Company. Express trains have been temporarily suspended (except between Fusan and Seoul), but the Ordinary Trains are equal to most American Trains, run at least three times a day from each end, and to some of them Sleeping and Dining Cars are attached. Sleeping berths should be reserved in advance.

Hotels under the Company's management are established on foreign lines at SEOUL (capital of Chosen), FUSAN and SHINGISHU (the two extremities of Chosen), KONGOSAN (the famous Diamond Mountain of Korea, rivalling Switzerland in scenery), MUKDEN (ancient capital of China, home of the Manchuria Dynasty, noted for Imperial Palaces and Tombs), CHANGCHUN (junction for three railways and "key to Manchuria"), PORT ARTHUR (of world-wide fame for its historic sieges and ruined forts), DAIREN (one of the greatest commercial cities in the Orient), and HOSHIGAURA (the finest seaside resort in North China).

From Dairen there are frequent and regular steamers to and from Shanghai, Tsingtao, Tientsin, etc.

For pictorial guide-books, pamphlets, and further particulars, apply to the Tourist and Ticket Agencies, or direct to the

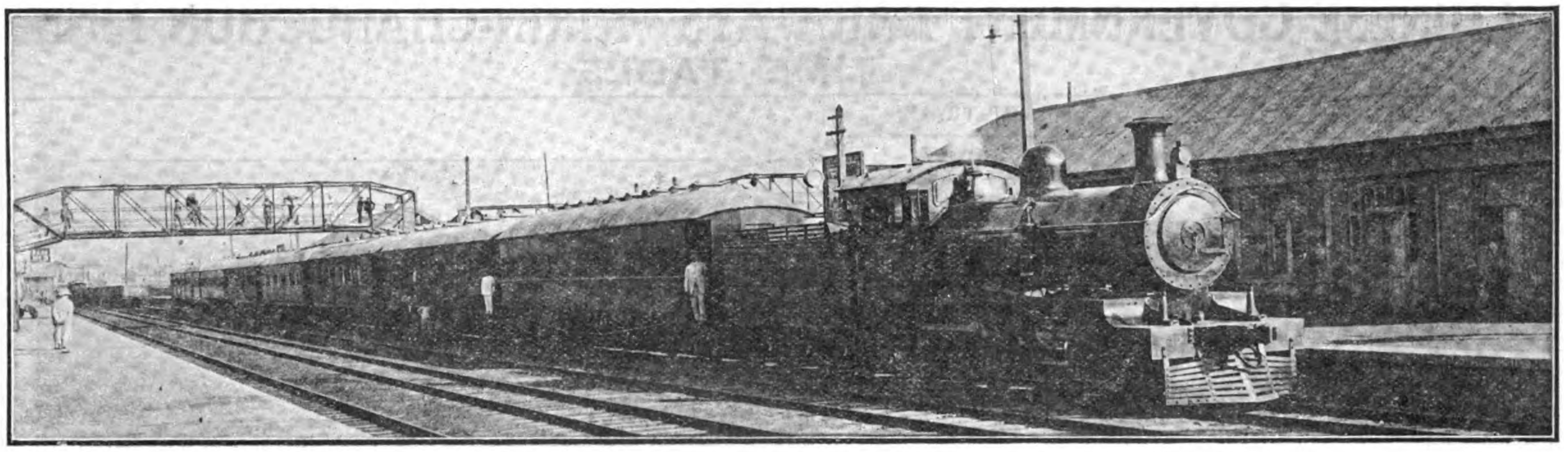
SOUTH MANCHURIA RAILWAY COMPANY

Head Office: DAIREN

Branch Offices: TOKYO, SEOUL, HARBIN, KIRIN, PEKING, AND SHANGHAI

Telegraphic Address: MANTETSU. Codes: A.B.C. 5th Edition, and Lieber's

CHINESE GOVERNMENT RAILWAYS



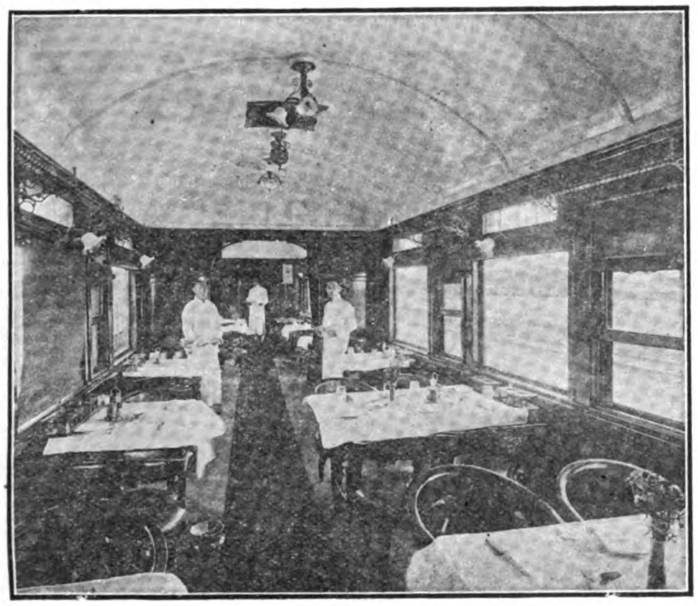
TRAIN DE LUXE AT TIENTSIN EAST STATION

The Peking-Mukden Line

Through service from Peking to Mukden, connecting at Mukden with the South Manchuria Express from Trans-Siberian Route. At Peking connection is made with the Peking-Hankow Railway for Hankow and Yangtze Ports, and Intermediate Points reached by the Chen-Tai Line to Taiyuanfu, the Tao-Ching Line, and the Pienlo Railway to Kaifengfu and Honanfu. Connection is also made at Peking with the picturesque Kalgan Line, "The road to the Great Wall." At Tientsin (Central) connection is also made with the Tientsin-Pukow line for Tsinanfu and Shanghai.

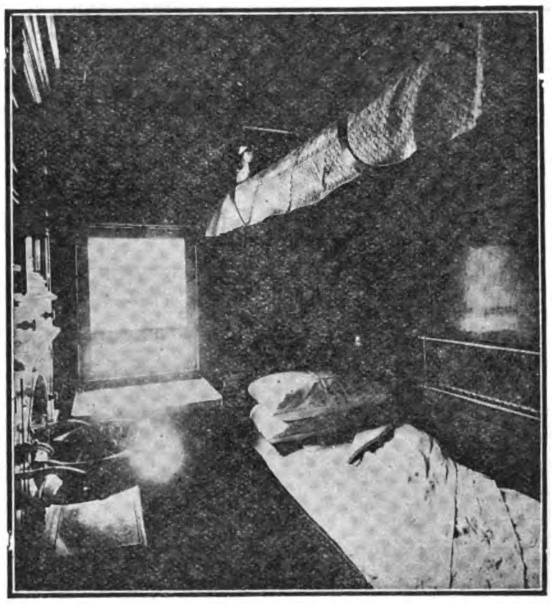
THE RAILWAYS OF NORTH CHINA PASS THROUGH THE MOST INTERESTING PART OF CHINA

PEKING.—The Capital, with the Walls, Palaces, Temples and Tombs.—**TIENTSIN.**—The Great Trade Centre of North China.—**TONGSHAN.**—The Largest Mining and Industrial Town in the Country.—**SHANHAIKWAN.**—Where the Great Wall ends at the sea.—**NEWCHWANG.**—The Busy Commercial Port of Manchuria.—**MUKDEN.**—The Ancestral home of the Manchu Dynasty. A Miniature Peking, with its Walls, Imperial Palaces, Temples and Tombs.



DINING CAR ON TRAIN DE LUXE

The through trains are equipped with Buffet and Dining Car Service. A Comfortable, Modern Train De Luxe of Compartment Sleeping Coaches is operated in connection with the through service of the Trans-Siberian and South Manchurian Railways.



FIRST CLASS SLEEPING BERTH, TRAIN DE LUXE

Through tickets to London and other places in Europe can be obtained at Peking and Tientsin from which stations passengers' luggage can be registered through to destination. Through tickets are issued and passengers' baggage registered through between the important Stations on the Peking-Mukden Railway and the South Manchuria Railway, Chosen (Korean) Railway and Imperial Government Railways of Japan.

For information regarding the many places of interest in China, Tourists will find "The Travellers' Handbook for China" with maps most useful. It is obtainable at any of the offices of Thos. Cook & Sons. The Chinese Government Railways Time Table book with Railway map can be had at any of the offices of Thos. Cook & Sons, and the International Sleeping Car Co., Hotels, Clubs and at all important Stations. Full particulars on application to any of the Stations or to the Traffic Manager of any of the Railways mentioned and on application to any office in America, Europe or the Far East of The Cie. International des Wagons-Lits, Thos. Cook & Sons, or

TRAFFIC MANAGER, CHINESE GOVERNMENT RAILWAYS (PEKING-MUKDEN), TIENTSIN.

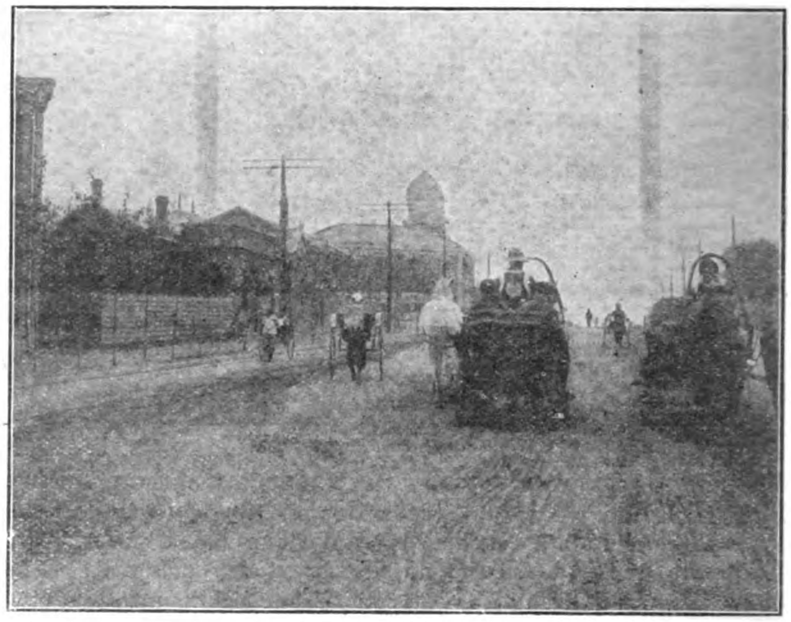
中華民國政府吉長鐵路行車時刻表

CHINESE GOVERNMENT RAILWAYS—KIRIN-CHANGCHUN LINE

TIME TABLE

DOWN TRAINS Daily Mixed	DOWN TRAINS Daily Mail	STATIONS	UP TRAINS Daily Mail	UP TRAINS Daily Mixed
P.M. 1.20	A.M. 8.30 d.	TOUTAOKOU	P.M. a. 6.00	A.M. 11.10
1.30 1.39	8.40 a. 8.42 d.	2.79 CHANGCHUN	d. 5.50 a. 5.45	11.00 10.56
2.14 2.19	9.12 a. 9.14 d.	12.69 KALUN	d. 5.15 a. 5.13	10.22 10.19
2.49 2.51	9.44 a. 9.45 d.	11.13 YINMAHO	d. 4.43 a. 4.42	9.46 9.40
3.07 3.09	9.58 a. 10.00 d.	5.38 HSIACHIUTAI	d. 4.29 a. 4.27	9.25 9.20
3.22 3.24	10.12 a. 10.13 d.	4.58 YINGCHENGTZE	d. 4.14 a. 4.13	9.07 9.05
3.51 3.55	10.35 a. 10.43 d.	9.14 TUMENLING	d. 3.53 a. 3.48	8.42 8.37
4.42 4.46	11.22 a. 11.24 d.	9.26 HUAPICHANG	d. 3.08 a. 3.06	7.51 7.47
5.07 5.08	11.37 a. 11.38 d.	6.46 KUTIENTZE	d. 2.52 a. 2.51	7.30 7.28
5.27 5.32	11.53 a. 11.55 d.	6.83 KIUCHAN	d. 2.37 a. 2.35	7.11 7.07
5.58	12.15 a.	8.30 KIRIN	d. 2.15	6.45

NOTICE:—"d" = Departure. "a" = Arrival. 25th November, 1917

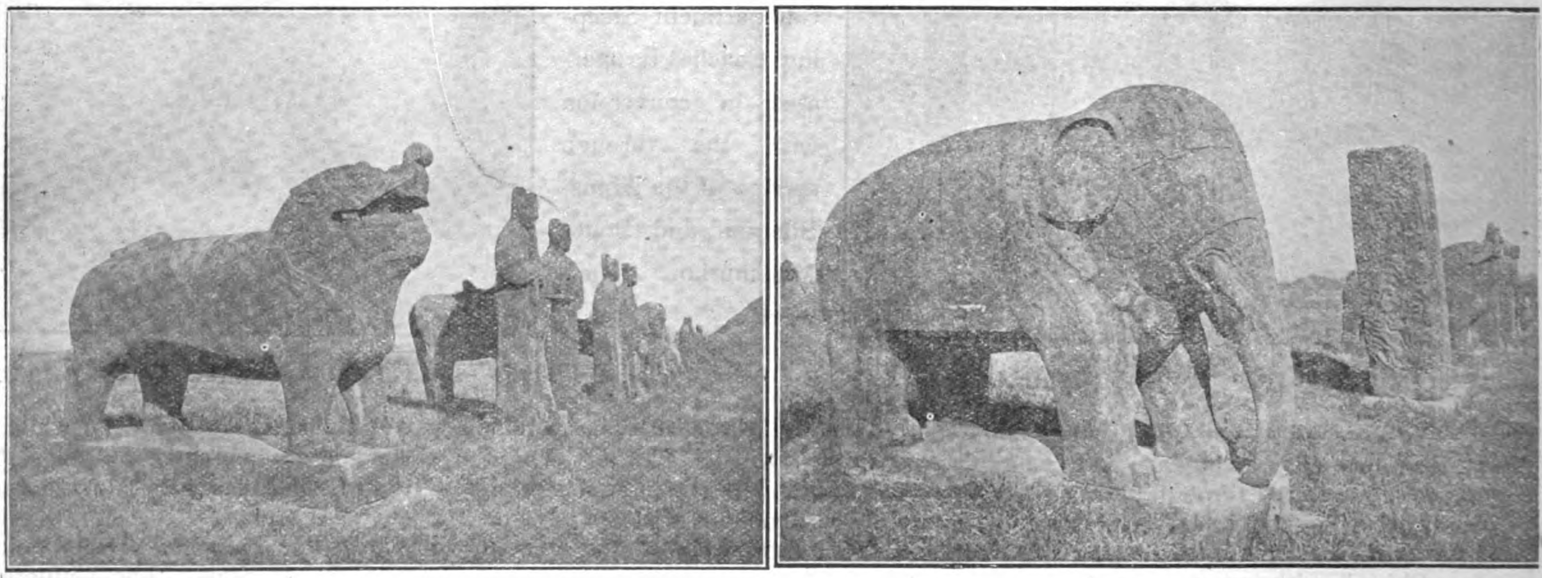


STREET SCENE, CHANGCHUN.

THE PIENLO RAILWAY

(Kaifeng-fu to Honanfu)

"THE FIRST SECTION OF THE PROJECTED CENTRAL TRUNKLINE"

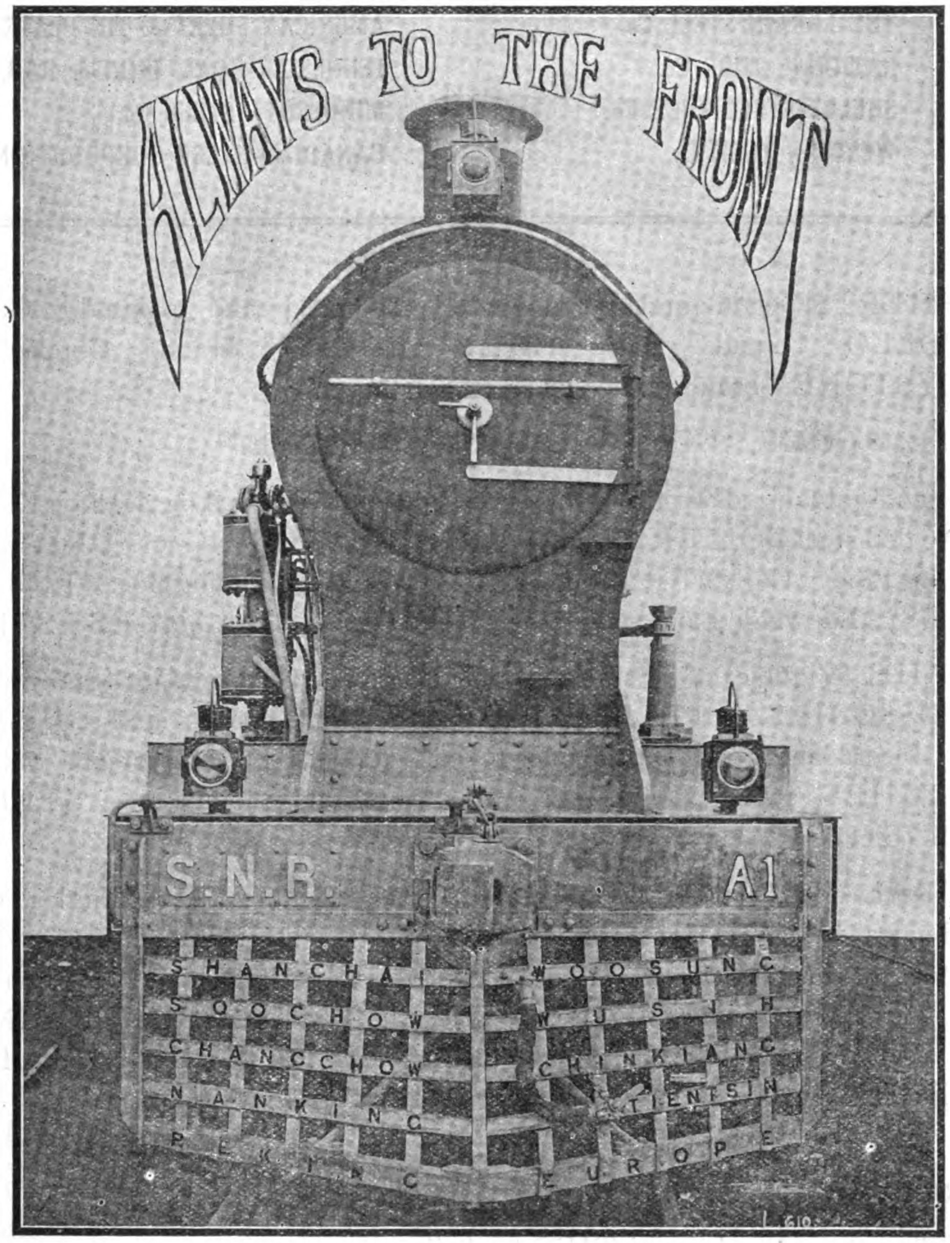


THE SUNG TOMBS NEAR KAIFENG-FU ON THE PIENLO RAILWAY.

The line connects with the through service of the Peking-Hankow Railway at Tcheng Tchéou, enabling the traveller to visit Kaifengfu, the provincial capital of Honan, and the old capital of the Empire at Honanfu.

CHINESE GOVERNMENT RAILWAYS

SHANGHAI-NANKING RAILWAY



ACCELERATED SERVICE BETWEEN SHANGHAI AND PEKING

Express and Fast Trains run daily between Shanghai North, Soochow, Wusih, Changchow, Tanyang, Chinkiang and Nanking, to which places weekend tickets, at reduced rates, are issued.

Through Bookings to Chinese Government and Japanese Lines
Reduced Rates for Picnic and other Parties

For further information apply to THE TRAFFIC MANAGER, SHANGHAI NORTH STATION,
TELEPHONE No. 900

United States Steel Products Co.

Exporters of the products of

CARNEGIE STEEL Co.	AMERICAN BRIDGE Co.
ILLINOIS STEEL Co.	AMERICAN STEEL & WIRE Co.
THE LORAIN STEEL Co.	AMERICAN SHEET & TIN PLATE Co.
NATIONAL TUBE Co.	TENNESSEE COAL, IRON & RAILROAD Co.
SHELBY STEEL TUBE Co.	MINNESOTA STEEL Co.
WESTERN TUBE Co.	CANADIAN STEEL CORPORATION.

STEEL SHEETS, plain and corrugated; galvanized and painted. Galvanized sheets "APOLLO" brand. Black sheets "EAGLE" brand. Copper bearing sheets "KEYSTONE" brand, either black or galvanized.

TIN PLATE, "COKE," "CHARCOAL" and "TERNE."

PIPE, black and galvanized wrought, for steam, gas and water; American or English Standards. Lapwelded steel BOILER TUBES. CASING, TUBING and DRIVE PIPE. Oil and Gas line Pipe. CONVERSE and MATHESON lead joint pipe. TUBULAR STEEL POLES. Lapwelded and seamless CYLINDERS. SEAMLESS STEEL TUBING.

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MILD STEEL PLATES for ships' tanks, stacks and boilers. Flange and fire-box steel. Checkered plates.

WIRES, baling and fencing; all classes of coated and uncoated for manufacturing purposes. Genuine "IOWA," "GLIDDEN" and "WAUKEGAN" barb wire. Fence and netting STAPLES. Tinned mattress, broom and bottling wire. Woven Wire Fence. FABRIC FOR REINFORCING CONCRETE. Wire Nails and Tacks of all descriptions

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IRON and STEEL WIRE ROPE, bright and galvanized for all purposes. Bright and galvanized SASH CORD, galvanized CLOTHES LINES. Bare and insulated COPPER WIRE and CABLE of every description.

COPPER RAIL BONDS, solid and stranded for electric railways.

WEATHER PROOF INSULATED telephone and signal WIRE. Galvanized telegraph and telephone wire.

ROUND and FLAT WIRE STEEL SPRINGS. PIG IRON, COAL and COKE.

FABRICATED MATERIAL for railway bridges, highway bridges, turntables, transfer tables, barges, steel chimneys, steel buildings, mill buildings, office buildings, tanks, towers, transmission towers, trestles, cylinder piers.

desired, with full particulars as to size, weight, finish, packing, etc. Special catalogue on application.

A COMPLETE RAILWAY NETWORK OF

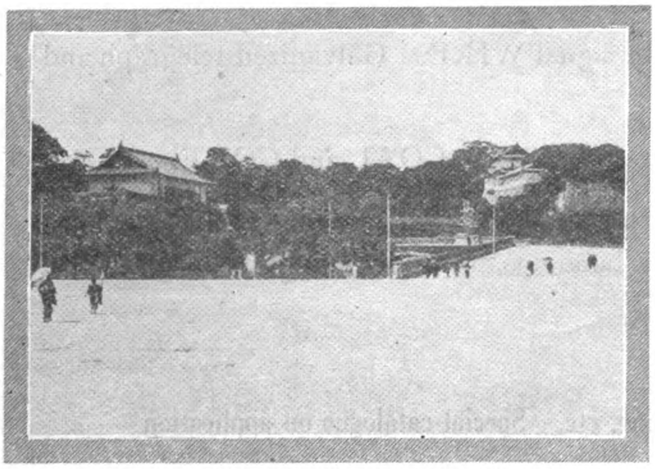
6,000 MILES

Thoroughly Equipped with all up-to-date Improvements, and reaching every nook and corner of the country.

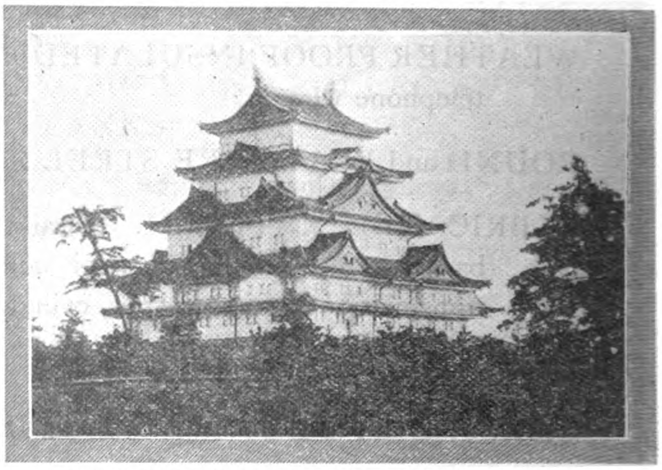
Reserved Cars, Private Cars, Special Trains, on Previous Arrangement for Tourist Parties of all sizes

First-Class equipment and fast service is maintained on the fine express and through trains, which carry chair, sleeping and dining cars.

Frequent service is provided between all the principal cities of the Empire.



NIJUBASHI (TWIN BRIDGES). THE MAIN APPROACH TO THE IMPERIAL PALACE, TOKYO



NAGOYA CASTLE, BUILT IN 1611, NOTED FOR ITS COPPER-BRONZE ROOFS CROWNED BY GOLD DOLPHINS

THROUGH BOOKING TO AND FROM

CHINA

Single and Return Tickets between China and Japan via Chosen

Period of Validity : Single, 40 days : Return, 110 days. 20% Reduction for Return Tickets

China-Japan Party Trip Tickets

Period of Validity : Two months. Reduction : 25%-50% for 10 or more passengers

China-Japan Circular Tour Tickets

Period of Validity : Four months. Reduction : 30% for Railway ; 25% for Steamer

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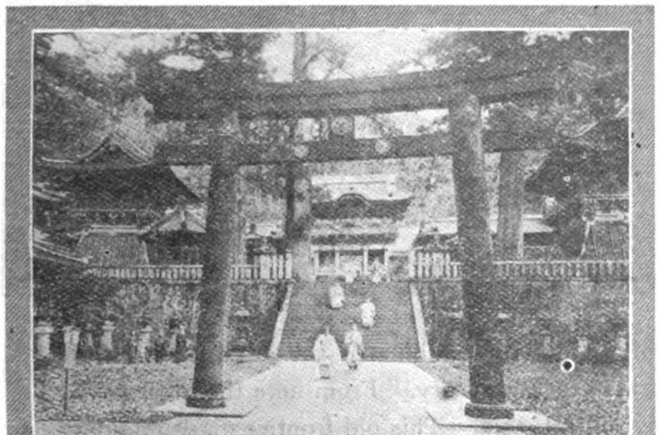
Parcel through conveyance between the principal stations in China and Japan viâ Chosen at low rates

FOR PARTICULARS, TIME-TABLES, MAPS, ETC., PLEASE APPLY TO
TRAFFIC DEPARTMENT, IMPERIAL GOVERNMENT RAILWAYS,
TOKYO



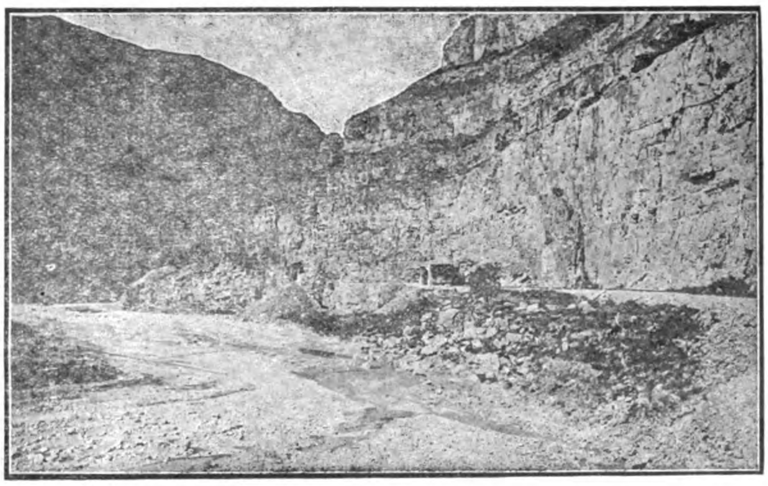
NIKKO SHRINE, THE ARCHITECTURAL GLORY OF WHICH IS WELL KNOWN ALL OVER THE WORLD

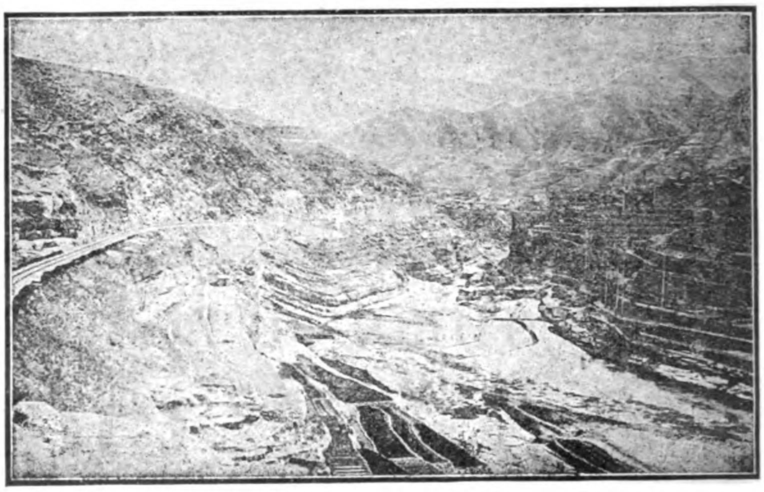
KIYOMIZU TEMPLE, COMMANDING A BIRD'S-EYE VIEW OF KYOTO

CHINESE GOVERNMENT RAILWAYS

CHENG-TAI RAILWAY

(Chinese Government Shansi Line—Chengtingfu to Taiyuanfu)



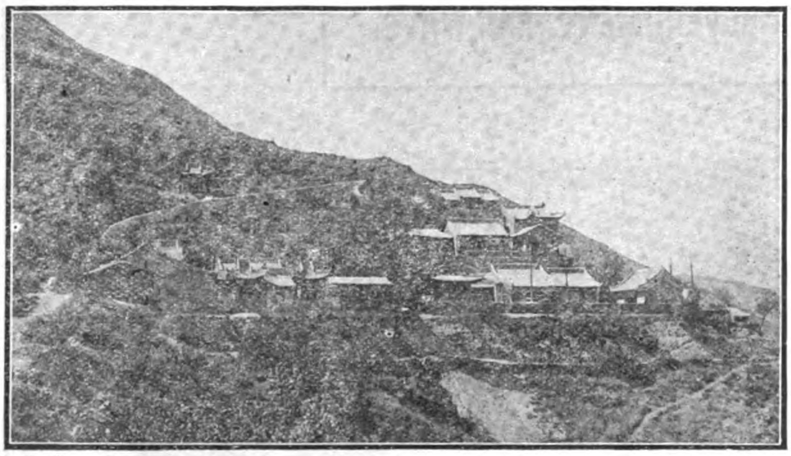


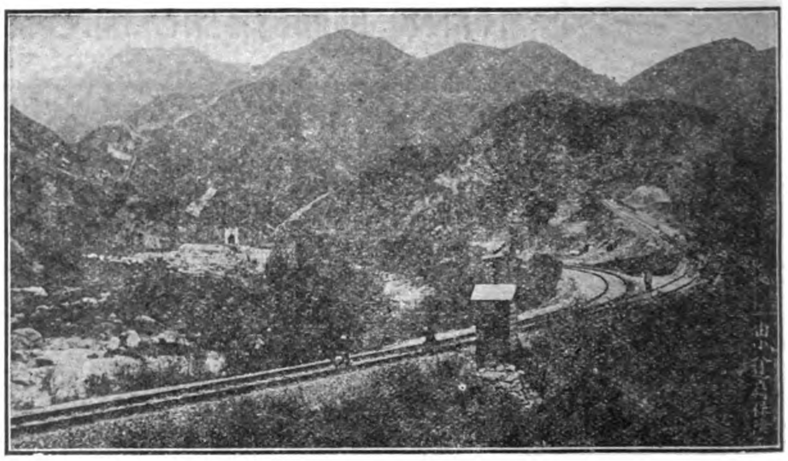
VIEWS ALONG ROUTE OF CHENG-TAI RAILWAY

The trains of this line connect with the through service of the Peking-Hankow Railway, affording Travellers the opportunity of seeing the most picturesque part of China. The line passes through a mountainous section of country, rich in Mineral Resources to the Provincial Capital of Shansi at Taiyuanfu. This interesting city is a great educational centre, and famous for the fine quality of its artistic embroideries.

PEKING-SUIYUAN LINE

"The Road to the Great Wall"

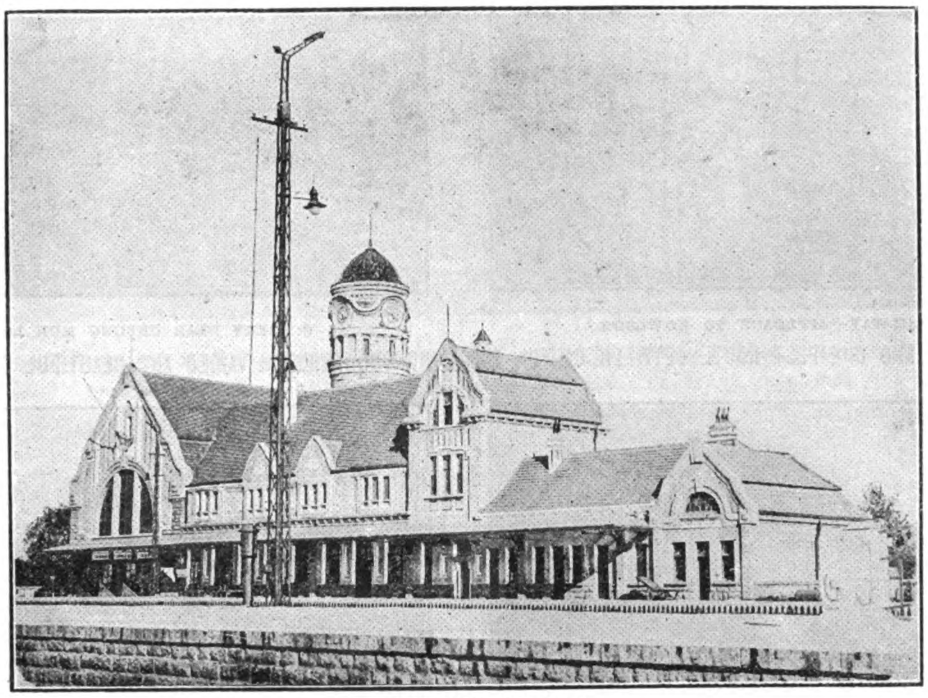




This line follows the ancient caravan route and military highway from Mongolia into China by the way of the historic Nankow Pass. This pass is the Key to Peking, and Kalgan is the gate of the Country. From here the great camel caravans set out on their long journeys across Mongolia to Siberia and Central Asia. This old frontier mart, retaining its time-honored characteristics, one of the most interesting sights of the Old World, is made accessible by the new railway. The line also carries the passenger in two hours from Peking to Nankow, when the Great Wall of China and the Ming Tombs may be seen. A foreign hotel is operated by the railway authorities at Nankow, where chairs and guides may be secured for the Tombs.

CHINESE GOVERNMENT RAILWAYS.

TIENTSIN-PUKOW LINE.



TSINANFU STATION.

THE above-named line, with its SOUTHERN end at PUKOW and NORTHERN end at TIENTSIN is having its through mail trains equipped with SLEEPING and BUFFET CARS running both ways every day. Comfortable seats and best meals are supplied on the trains. SANITARY ARRANGEMENTS are kept in perfect order and condition. A ferry steamer of modern type is provided for the conveyance of passengers across the river BETWEEN NANKING and PUKOW. Along this line travellers are afforded the opportunity of seeing the views of the country and many places of historic antiquities that will serve interest to the travelling observers. The time for the running of the trains are so scheduled as to make them CONNECT WITH the trains of the SHANGHAI-NANKING LINE on the southern terminus and those of the PEKING-MUKDEN LINE at the northern end. Travellers who intend to go to PEKING, KALGAN, TATUNG, MUKDEN, SOUTH MANCHURIA and SIBERIA or VICE VERSA are enabled to effect their journeys of a great distance at a very short space of time, it being considered the SAFEST and QUICKEST route for the travelling public.

For further particulars, please apply to:

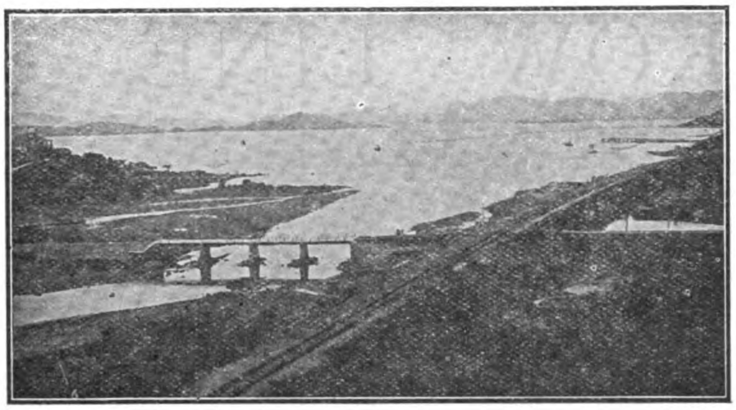
THE HEAD OFFICE OF THE RAILWAY, TIENTSIN, the Agencies of Messrs. THOMAS COOK AND SON, the INTERNATIONAL SLEEPING CAR AND EXPRESS TRAINS COMPANY or the NORDISK RESEBUREAU.

Telegraphic Address: "TSINPURY" TIENTSIN. **Codes: A.B.C. 5th Edition.**

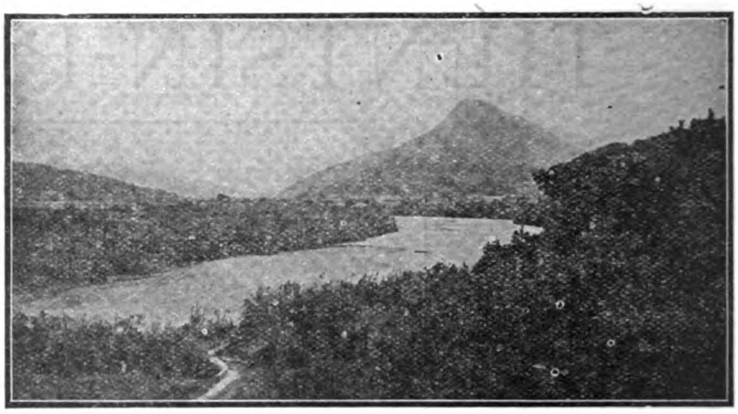
津浦路綫南達浦口北至天津每日均有快車往來並附掛臥車餐車食品精潔座次安舒關於衞生各事皆極講求南京浦口間近添設新式渡輪迎送旅客尤稱便利沿途風景名勝之區古蹟極多足饜游觀者之心目且行車時刻南與滬甯北與京奉均相聯接凡欲至北京張家口大同及奉天南滿西伯利亞等處往來均可赴期而至行旅視爲坦途萬里達於旦夕有志游歷者所樂於取道也如有詢問事項天津津浦鐵路管理局或通濟隆洋行萬國臥車公司北方游歷公司等經理處均可通函

CANTON-KOWLOON RAILWAY

VIEWS ON THE BRITISH SECTION (22 MILES) VIEWS ON THE CHINESE SECTION, 89 MILES (Chinese Government Railways)



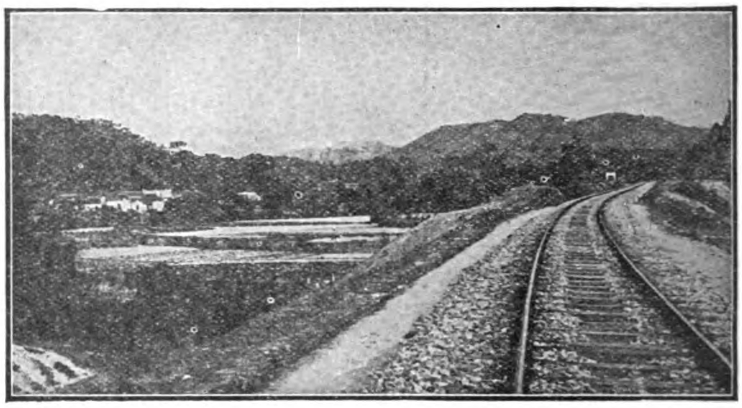
CANTON-KOWLOON RAILWAY—APPROACH TO KOWLOON



SCENERY NEAR CHEUNG MUK LOW—C. K. RAILWAY

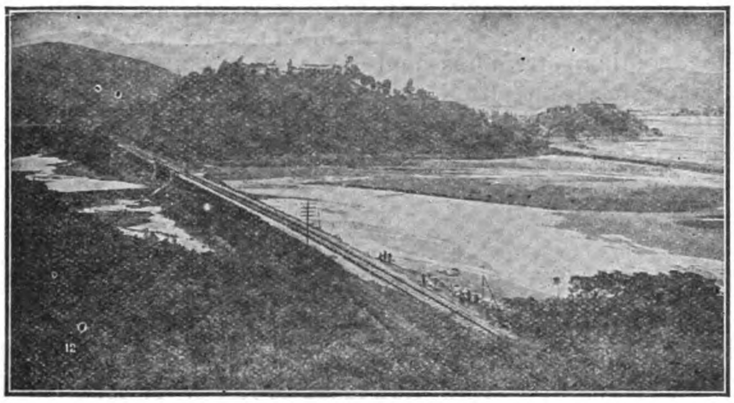
QUICKEST AND CHEAPEST ROUTE BETWEEN CANTON AND HONGKONG THROUGH VARIED AND BEAUTIFUL SCENERY

CANTON-KOWLOON RAILWAY—SCENE ALONG ROUTE

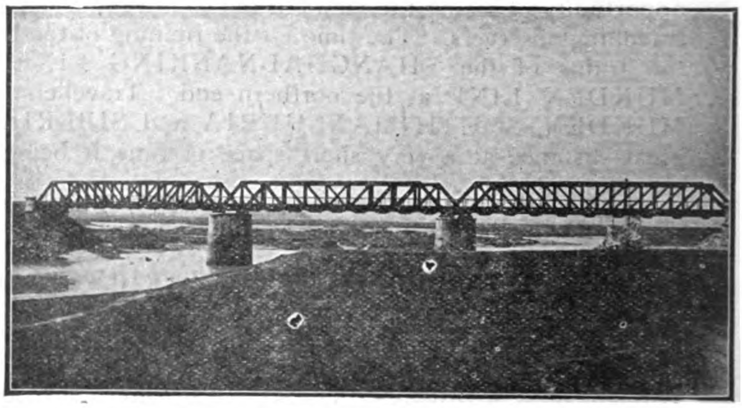


SCENERY ALONG ROUTE

THREE EXPRESS CORRIDOR TRAINS EACH WAY DAILY—HOT MEALS AND OTHER REFRESHMENTS SERVED

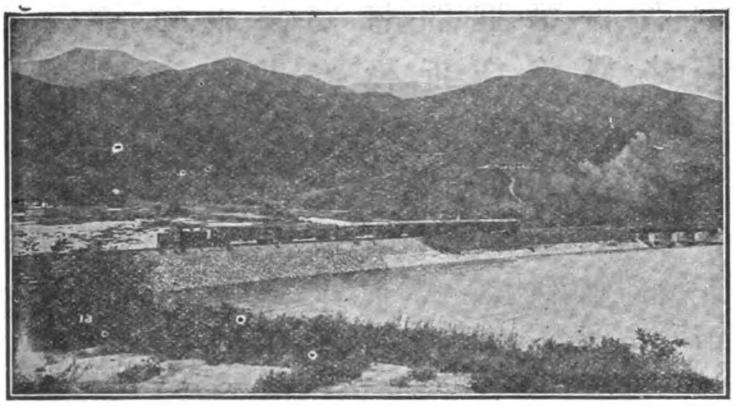


CANTON-KOWLOON RAILWAY—CROSSING TIDE FLATS

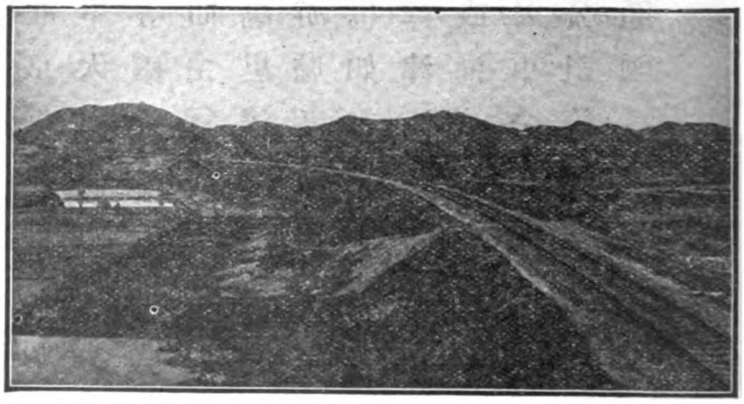


KAN SUI BRIDGE—C. K. RAILWAY

3½ HOURS BETWEEN UP AND DOWN TRAINS FOR BUSINESS MEN OR TOURISTS AT CANTON OR HONGKONG



CANTON-KOWLOON RAILWAY—EMBANKMENT APPROACH TO BRIDGE



GRAND CURVE NEAR SHEUNG PING

TIME TABLE from November 7th, 1918

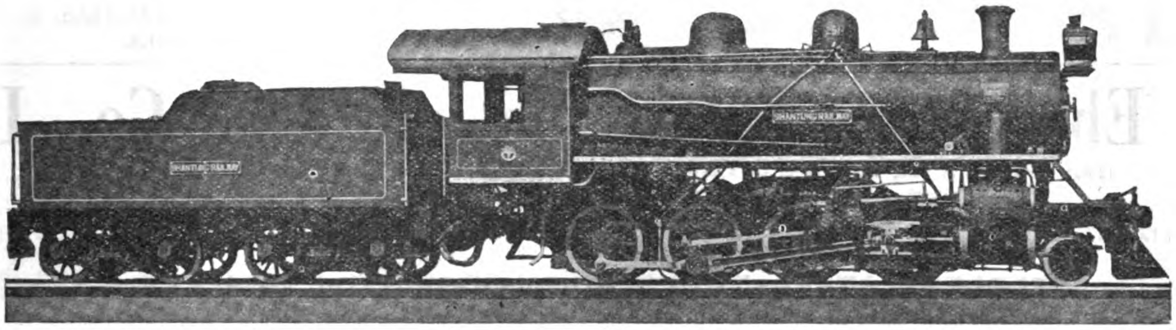
Leave Hongkong (Kowloon) *8.05, 9.20 a.m., *3.00 p.m.
Arrive Canton (Tai Sha Tou) 11.50 a.m., 5.10, 6.40 p.m.

Leave Canton (Tai Sha Tou) *7.30, 8.35 a.m., *3.30 p.m.
Arrive Hongkong (Kowloon) 11.10 a.m., 5.38, 7.25 p.m.

Special terms and special trains for large tourist parties. For further particulars see advertisements or apply to

*Express THE MANAGER (British Section), Kowloon, HONGKONG. THE ADMINISTRATION (Chinese Section), CANTON.

SHANTUNG RAILWAY



Total Weight of Engine, 160,000 pounds; Weight on Drivers, 139,500 pounds; Diameter of Drivers, 50 inches; Boiler Pressure, 180 pounds; Cylinders, 20½ × 26 inches; Maximum Tractive Power, 33,400 pounds

Three of these engines were delivered to the Shantung Railway in 1916, and four more are under construction.

The experience of the American Locomotive Company in designing and building locomotives for all classes of railroad construction and operation, dates back to 1835. Back of each design is also the experience gained in building over 60,000 locomotives.

AMERICAN LOCOMOTIVE COMPANY

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JAPAN—Mitsui & Company, 1 Suruga Cho, Tokyo

STEEL
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SPRING STEEL "
BLOOMS.
BILLETS.
SLABS.
FLATS.
SLEEPERS.

STEEL
LIGHT RAILS
HEAVY "
FISHPLATES.
PLATING BARS.
DIAMETER "
ANGLES.
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TEES.

The Ebbw Vale Steel Iron and Coal Co., Ltd.

(Joint Proprietors of John Lancaster & Co.'s Griffin Nantyglo, Powell's Tillery and Powell's Navigation Steam Coals).

STEEL SHEETS, Black and Galvanized, Plain and Corrugated.

Makers of SPECIAL STEEL PANEL PLATES hydraulically flattened and resheared to exact dimensions. Other STEEL SHEETS to Special Analyses. Brands: "E.V." "Furnaces," "Napoleon."

WELDLESS STEEL TUBES FOR LOCOMOTIVE BOILERS.
STANDARD SIZES AND GAUGES. WELDLESS COUPLINGS.

SUNDRIES
CARRIAGE SPRINGS.
WAGON "
LOCOMOTIVE "
INGOT MOULDS.
GENERAL CASTINGS (UP TO 40 TONS).
WELDLESS STEEL TUBES. WELDLESS COUPLINGS. WAGONS.

Carriage, Wagon and Locomotive Springs to Railway Standard and other Specifications.

BEST QUALITY TAR, and Sulphate of Ammonia produced by Direct Recovery Process.

Coal Output Capacity	**3,500,000 Tons per annum.**
Pig Iron " "	**300,000 "**
Steel " "	**250,000 "**

(Bessemer & Siemens Acid and Basic.)

Brick Output Capacity	**20,000,000 per annum**

(Buff and Red Facings, Fire, Common and Ornamental.)

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ABERCARN
BLACK VEIN
COAL.

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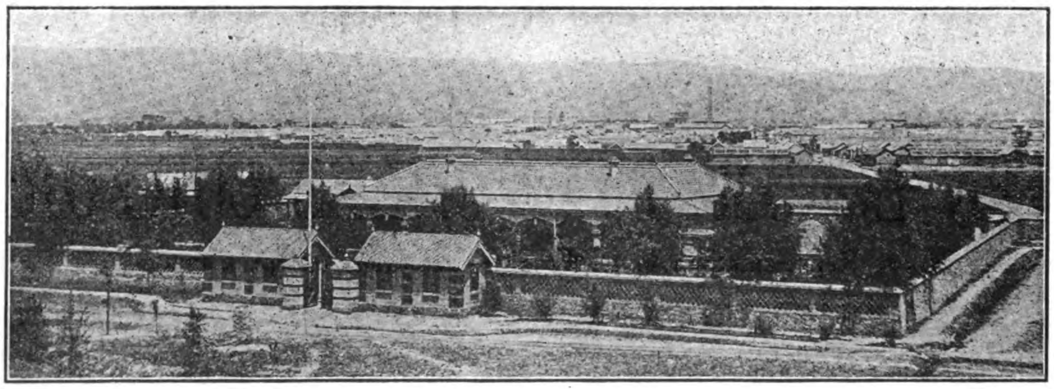
CHINESE GOVERNMENT RAILWAYS

The Tao-Ching Railway

TAOKOU TO CHINGHUA

(CHINESE GOVERNMENT HONAN LINE)



A VIEW ON THE TAO-CHING RAILWAY, WITH MINE IN DISTANCE.

"CHINA'S ROAD OF ANTHRACITE"

The trains of this line connect at Sin-Siang-Sien with the through service of the Peking-Hankow Railway. It taps the great Anthracite Coal Deposits of Shansi, and conveys the products of the Mines to the nearest navigable river.

THE
ENGLISH ELECTRIC
COMPANY, LIMITED

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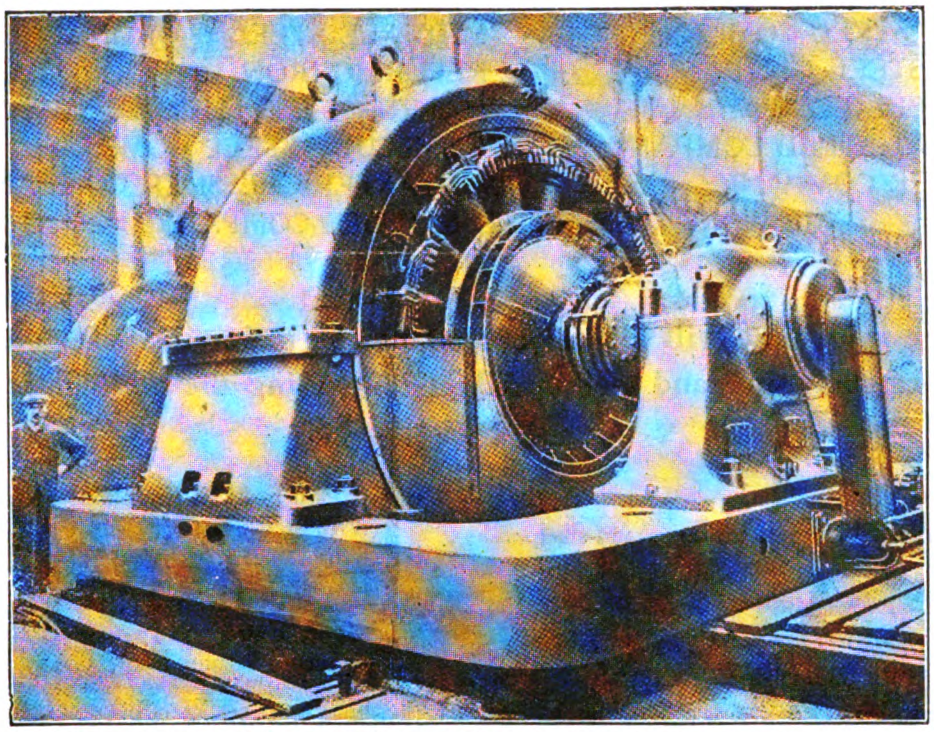
ORDNANCE WORKS, SCOTSTOUN.
SIEMENS WORKS, STAFFORD.
ORDNANCE WORKS, COVENTRY.
PHOENIX WORKS, BRADFORD.
WILLANS WORKS, RUGBY.

HYDRO-ELECTRIC MACHINERY



ONE OF SIX 7,775 K.V.A. HYDRO-ELECTRIC GENERATORS SUPPLIED TO A JAPANESE COMPANY

THE COMPANY ARE MANUFACTURERS OF: STEAM TURBINES, CONDENSERS, DIESEL OIL ENGINES, ELECTRIC POWER AND SUB-STATION PLANT, COMPLETE ELECTRIC RAILWAY AND TRAMWAY EQUIPMENTS, ROLLING STOCK, A.C. & D.C. MOTORS, SWITCHGEAR, ETC.

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QUEEN'S HOUSE, KINGSWAY, LONDON, W.C.2

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SHARON STEEL HOOP COMPANY
TRUMBULL STEEL COMPANY
WHITAKER-GLESSNER COMPANY
YOUNGSTOWN SHEET & TUBE COMPANY

We invite and will give prompt attention to inquiries for all forms of iron and steel products including the following:

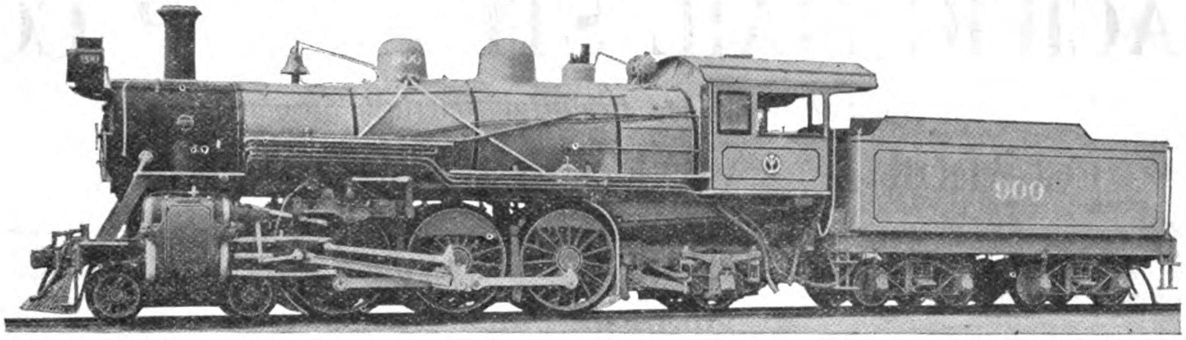
Pig Iron
Blooms, Billets, Slabs, Sheet Bars, Wire Rods, and Skelp or Gas Strips
Rails, Light and Heavy, with Accessories
Girder and High Tee Rails, with Accessories
Bethlehem and Standard Structural Shapes
Lackawanna Steel Sheet Piling
Bars, Bands, Hoops
Hot and Cold Rolled Strip Steel
Plates—Tank, Hull, Flange, Boiler, Marine Boiler and Fire Box quality; also Boiler Heads and Fronts, Manholes and Manhole Fittings, and Boiler Braces
Sheets—Plain and Galvanized, Flat and Corrugated, Blue Annealed
Wire Products—Plain and Galvanized, of various grades; Wire Nails, Wire Fencing, Barbed Wire
Tin Plate
Pipe—English Gas and Steam, American Standard Weight, Extra and Double Extra Strong; Black and Galvanized Line Pipe; Casing; Tubing; Drill Pipe and Drive Pipe
Boiler Tubes—Welded Steel and Charcoal
Electrical Conduit—Rigid and Flexible
Cold Rolled and Cold Drawn Steel Shafting
Bolts and Nuts and Spikes
Forgings, Axles, Rolled Steel Car Wheels, Tires
Alloy Steels
Tool Steels

We make a specialty of large size plates, one of our Member Companies having recently completed a mill in which rectangular plates can be made up to 190 inches wide, circular plates up to 196 inches diameter, and flanged boiler heads up to 183 inches diameter. Plates recently completed there are the largest that have ever been produced.

As our Member Companies' annual ingot producing capacity is in excess of 12,000,000 tons, we are in a position to handle the largest requirements as well as give our customers fair prices, quick service, and dependable attention to every detail.

Inquiries should include exact specifications, giving quantities desired, particulars as to size, weight, packing, country of destination, etc., and purposes for which the materials are required.

BALDWIN LOCOMOTIVES for SOUTH MANCHURIA

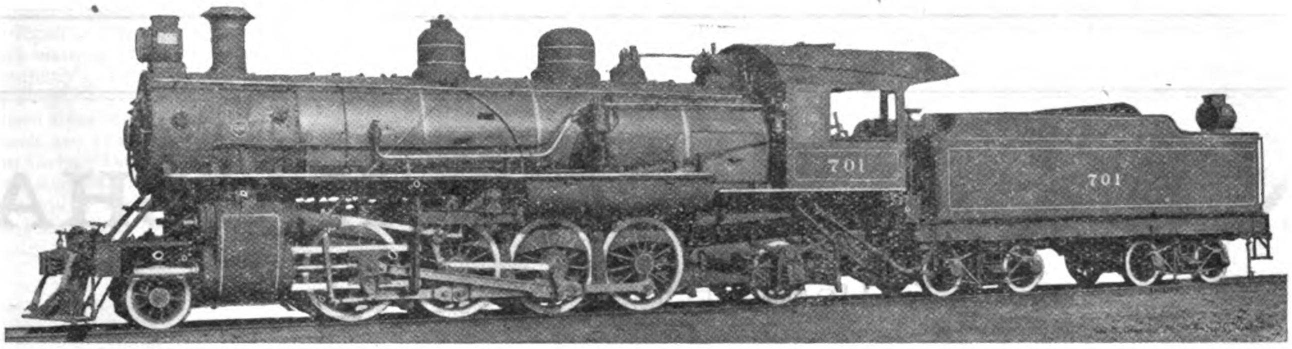


PACIFIC TYPE LOCOMOTIVE FOR PASSENGER SERVICE.

Cylinders—21 x 26″
Coupled wheels, diam.—69″
Steam pressure—200-lbs.
Grate area—44 sq. ft.
Water heating surface—2,455 sq ft.
Superheating surface—589 sq. ft.
Weight on coupled wheels—129,000-lbs.
Weight, total engine—199,600-lbs.
Tractive force—28,200-lbs.

The locomotives illustrated were specially designed for the service requirements of the South Manchuria Lines. They represent the latest practice of the builders, and are equipped to develop maximum power in proportion to their size.

Our engineers are ready to aid you in selecting the types of locomotives best fitted to do your work. Your motive power problems may be unusual, but we will guarantee to solve them.



MIKADO TYPE LOCOMOTIVE FOR FREIGHT SERVICE.

Cylinders—22″ x 28″
Coupled wheels, diam.—57″
Steam pressure—185-lbs.
Grate area—46.7 sq. ft.
Water heating surface—2,575 sq. ft.
Superheating surface—612 sq. ft.
Weight on coupled wheels—154,000-lbs.
Weight, total engine—198,000-lbs.
Tractive force—37,400-lbs.

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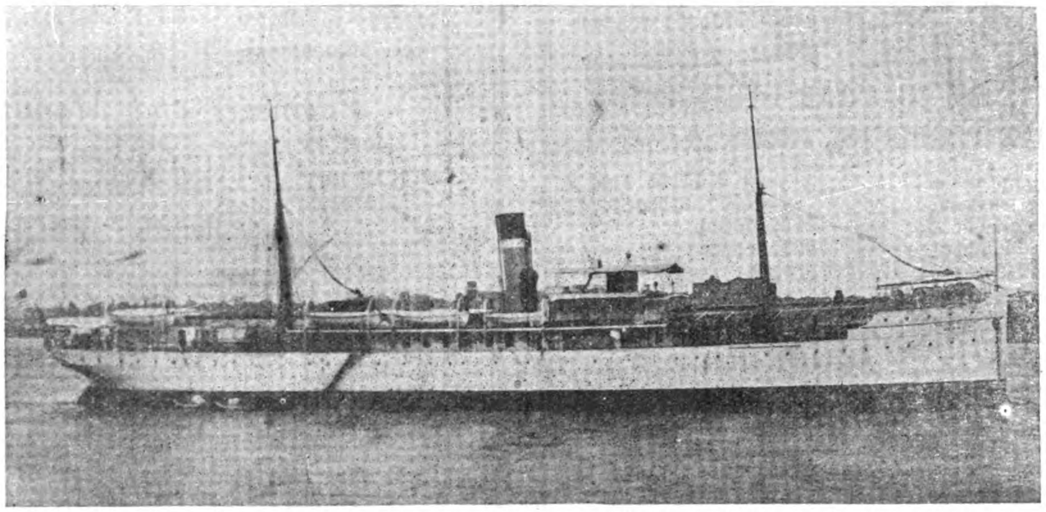

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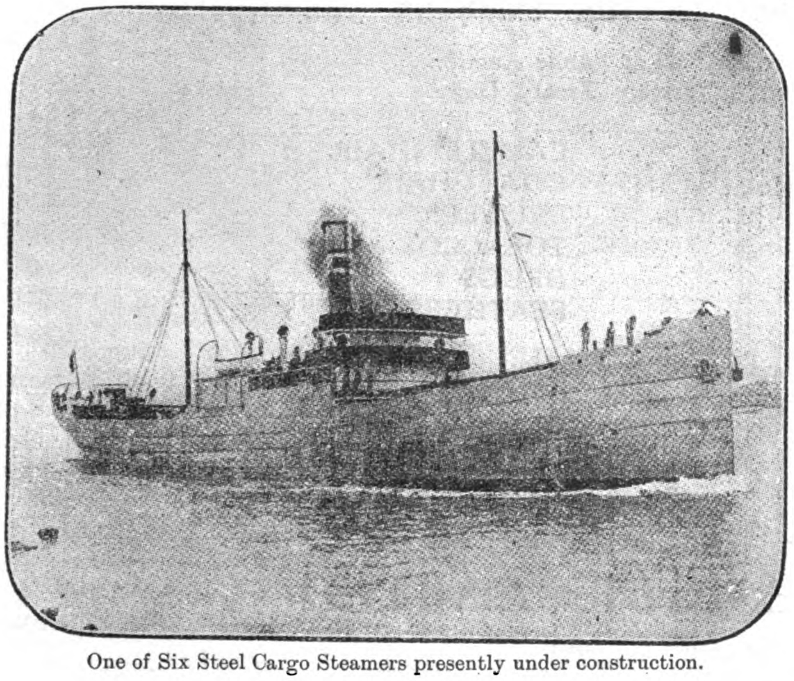

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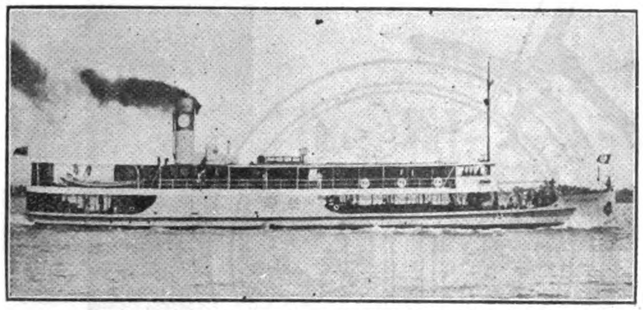

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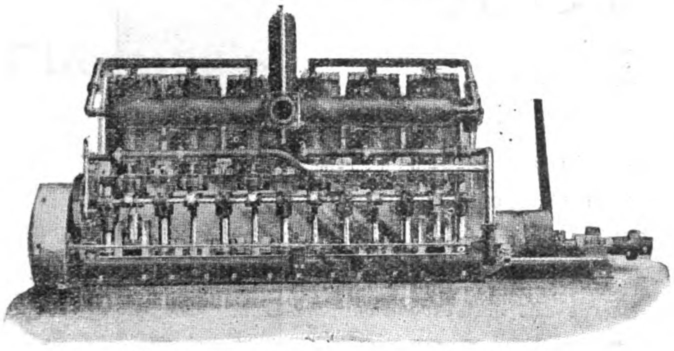

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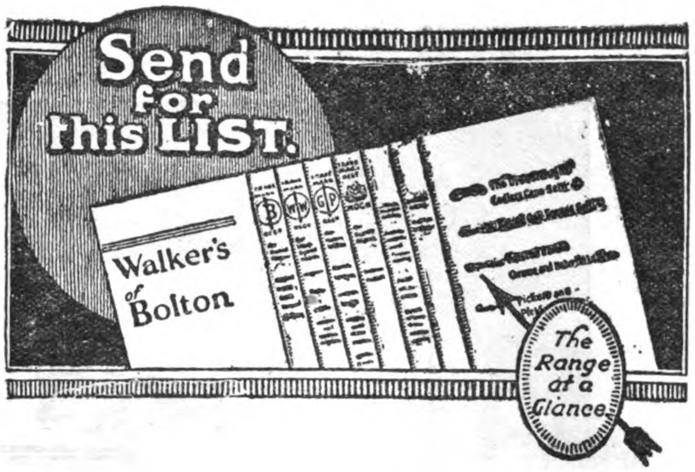

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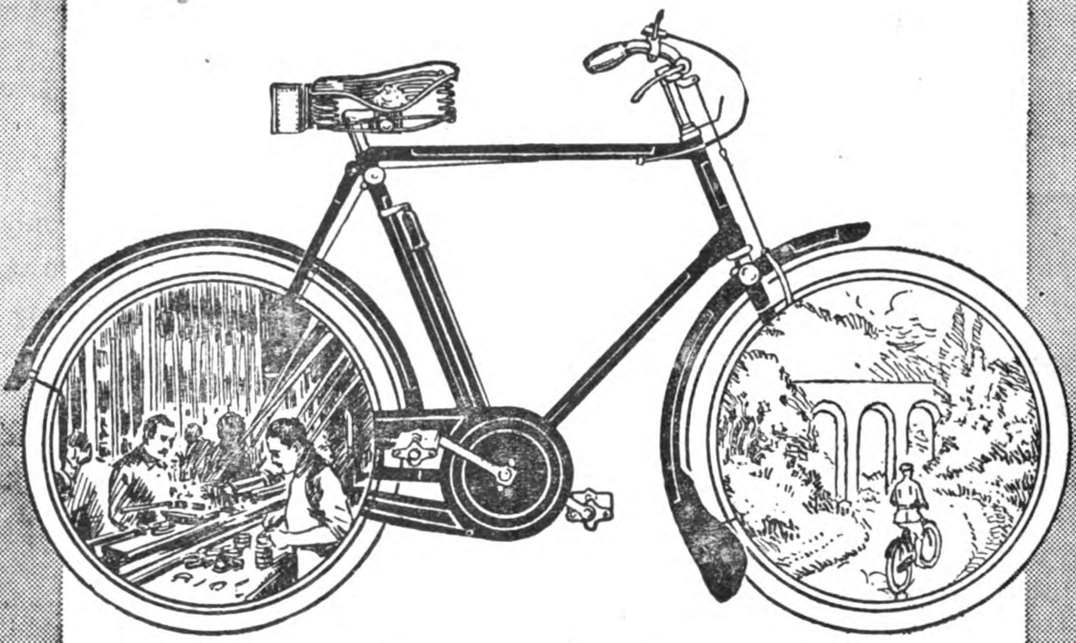

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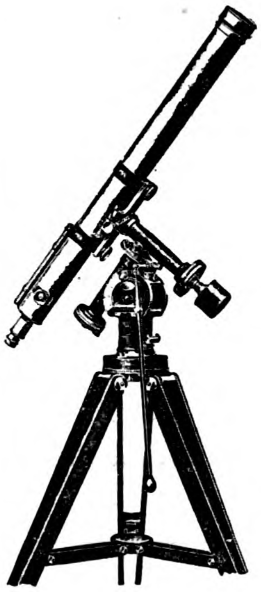

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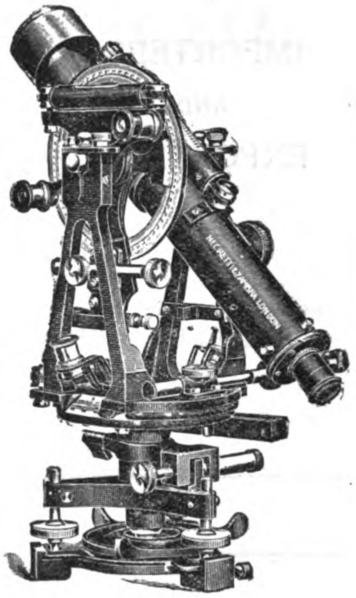

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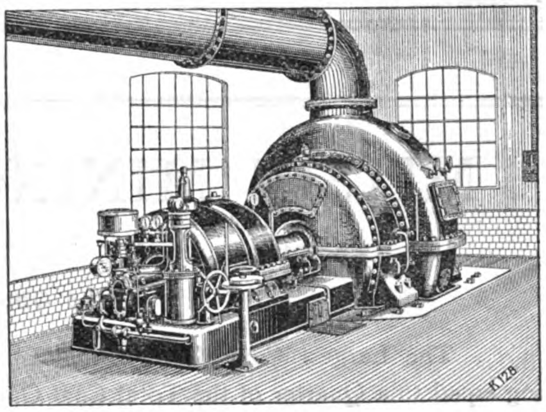

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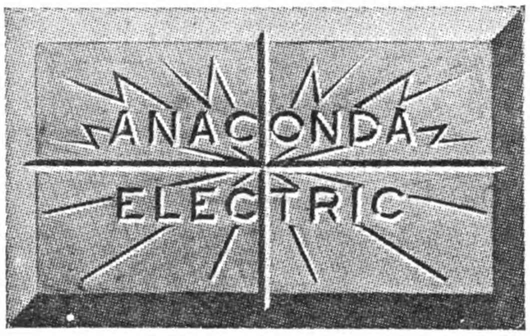

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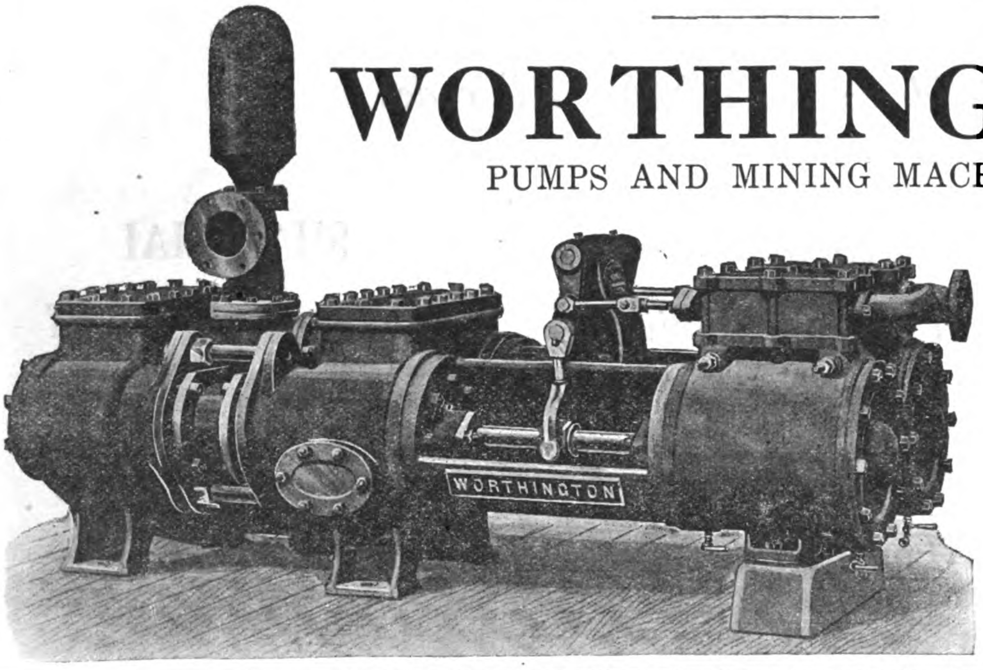

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ENGINEERING FINANCE COMMERCE

VOL. XVI SHANGHAI, MARCH, 1920 No. 3

Forty-four Years in China

An Appreciation of Sir John Jordan's Forty-four years of Service as a British Consular and Diplomatic Official and as a Consistent and Devoted Friend of the Chinese People

By Rodney Gilbert

The Right Honorable Sir JOHN NEWELL JORDAN, P.C., G.C.I.E., K.C.B., K.C.M.G., Envoy Extraordinary and Minister Plenipotentiary for Great Britain to the Republic of China, has retired and will leave Peking on March 3rd and will sail from Shanghai for England on March 6th. On the 10th of March, 1876, Sir John Jordan was appointed a Student Interpreter in China, so for a few days less than 44 years his interests have been officially centred in the affairs of China and his Government's relations with this country, and there is every reason to believe that for the rest of his life his personal sympathies and interests will be centred in the Chinese people to whom he is a most devoted friend after all these years of close association. His Government has shown its appreciation of his services in the many honours and decorations conferred upon him. We desire to express the appreciation which nearly every patriotic Chinese and certainly every Occidental resident in the Orient feels for his services to China, to the improvement of Sino-foreign relations, and to future generations in China which will benefit by the liberal policy which he has preached and inaugurated.

THOSE of us who have been in China a few years have observed that Chinese affairs travel in little cycles; that each cycle seems to end where the other began, and that at the end of each, China seems to be poised on the brink of utter destruction. Most of us who return to our homes in the Occident have little to predict of China's future and little hope to extend of her eventual regeneration. Those of us who are really interested in China's welfare should, therefore, take heart when a man who has spent more than forty years in China—who with a shrewd and practical mind is in a position to review modern Chinese history from the time when her highest officials believed that our homelands were little islands in the four seas, just off the fringes of China's great bulk, inhabited by upstart savages—dwells with great earnestness upon the good qualities of the Chinese people, and, as an intimate student of their many failures, still predicts for them complete regeneration and a great future under a competent democratic government. Sir John Jordan, who with unparalled experience in China and with a perfect memory can sit down and unfold over a cup of tea a perfect panorama of China's whole modern history, is about to return to his home believing sincerely in China's worth and in her future. One has to know him personally to be assured that sentiment does not influence his judgment and that he is neither an idealist nor an optimist in the invidious senses in which these terms are so often used.

Sir John Jordan was born and grew up a few miles from Belfast, in a part of Ireland in which both ideals and theories have to show practical and tangible results to be accepted, and in which emotionalism has as little influence over judgment as in any known quarter of the earth. If there is any people on earth whose opinions and actions are ruled by reason and experience, it is the Scotch-Irish. But they are a people ruled absolutely by their convictions, consistent in their adherence to such ideals as their experience teaches them are sound and practical, and conscientious to the limit of obstinacy in the pursuit of what they believe to be correct policy. Sir John Jordan has been throughout his career in China typical and representative of his race; and as he now leaves China an optimist and a fond friend of the people whom he has seen and known from every angle, we can rest assured that he bases his hopes and his judgments upon his experience and upon reasonable deductions from his experience.

The political creed of a man who has been so long in China and whose opinions will probably guide British policy in the Far East for many years to come, will undoubtedly be of interest to everyone who is attempting to peer into the future of Oriental affairs. The burden of every report which Sir John Jordan has written to his home government in recent years and the foundation upon which all of his advice to Chinese officials has been built is epitomized in the following brief *credo*, which has been given the writer by a British official who has had exceptional opportunities for several years to familiarize himself with all of the British Minister's correspondence and with his intimate thoughts as well:

"The best interest of China is the best interest of the world.

"China is not really distracted with internal conflict—except on paper.

"The credit of China is based in the soil and the people—both productive.

"Communications make unification possible in all branches.

"China has no Government in the modern sense because she has never needed one before.

"China has always had effective local government and the representative, democratic Government will come with railways and other communications and educational mediums."

It is Sir John Jordan's sincere belief that it will be to the ultimate advantage of every country which has, or hopes to have, commercial and financial interests in China to assist in the development of a strong, united and independent China, and that the only practical diplomacy will be such as is honestly designed to develop in this country the means of communications, the educational facilities, and the mediums of expression for China's growing public opinion which are essential to a democracy. Foreign interests, in his mind, coincide with China's best interests, and the policy which is most helpful to China serves not only Great Britain but every other country which hopes to have a share in the development of the Far East. Twenty years ago the China policy of the Occidental powers was very far removed from any such standard. At that time it would have sounded dangerously unpractical; but now after a course in the new ethics evolved by the Great War, there does not seem to be much novelty in it. One has to realize that Sir John Jordan has preached this doctrine to Chinese officials and to foreign diplomats for a score of years to realize how original he has been in his policy, how consistent he has been, and how great a part he has played through his advices to his own government in reshaping the world's attitude towards China.

The Fruits of Straightforwardness

Something of this every Chinese who has his country's interests at heart now appreciates, but it would be untrue to say that all of Chinese officialdom understands the retiring Minister's policy or that this attitude has endeared him to all. He has been too frank a critic of the shortcomings, the flagrant offenses against the public welfare and the still more flagrant weaknesses of many of China's officials and politicians, who are notoriously their country's worst enemies, to endear himself to them.

The average Chinese official has about as deep an appreciation of the man who tells him the unadulterated truth as a child has of an unsweetened medicinal potion. The Chinese who is busy serving his own interests and concealing his faults, dearly loves the man who is blind to his crimes, blandly credulous of his impositions, tolerant of his criminal procrastinations, sympathetic with his weaknesses, and generally gullible and good natured. The man who bluntly brands his peculations as thefts, his evasions as lies, and who pounds the table when he would seek relief from an embarrassing situation in polite persiflage and delay, the Chinese official comes in time to fear wholesomely and to respect, but he has to know him many years indeed and to be wholly convinced of the honesty and friendliness of his motives, to value him either as an associate or as a friend. It has taken Chinese officialdom—even the honest element in it—many years indeed to appreciate Sir John Jordan. Had he left this country ten years ago Peking would have heaved a sigh of relief and have prayed for a less capable and a more pliant man in the British Legation; but now one of the richest rewards for Sir John's many years of hard work along the lines of straightforward diplomacy, is certainly the consciousness that not only hundreds of the officials with whom he has associated, but thousands of truly patriotic Chinese whom he has never met, realize the services which he has done China, and are paying tribute to him in their sincere regrets for his departure.

To every Chinese who has really had his country's interests at heart, Sir John Jordan has always been a mild-mannered, kind, approachable and sympathetic friend, lavish of his time and of his best work; but to those who have been self-seeking, who have deliberately opposed China's development, he has always been a lowering and ominous spectre, whom they were only too eager to conjure out of the Capital. This latter element is fairly well represented in Peking now and there is no doubt that there are many Chinese who will welcome a change of regimé in the British Legation, nor would there be any point in denying this since it redounds altogether to Sir John's credit and, in the light of what we have written of Chinese officialdom's taste in diplomats, is a sufficient explanation in itself of what is the matter with China.

Early Days with Historical Personages

Sir John Jordan was born on September 5, 1852, in a small seaside town about ten miles from Belfast, and up to the time of his appointment as Student Interpreter in China he had not travelled very far afield from his native environment. He took his degrees at Belfast University and subsequently accepted an assistant professorship of classics. The desire to come to Japan prompted him to take the consular examinations, but after he and four others had passed the examination, only one appointment was available in Japan and Sir John, with the three fellow aspirants to consular dignities, came to China as a Student Interpreter, and before the year was out found himself established in what is now the main office building of the Legation.

Sir John's memories of those early days are colored with personal impressions, and not so much with the political significance of events and people. There are not many persons now living in China who remember him as a student. Perhaps Sir Alexander Hosie and Mr. Ku Hung-ming are the only two residents of Peking who are in a position to speak of Sir John Jordan's student days. He is described as an industrious student, and as a vigorous exponent, at the same time, of outdoor life. He rode a great deal, spent much of his time in the Western Hills, and is remembered as a tall and physically active young man.

After the completion of his preliminary studies at the Legation, he held five minor consular positions in rapid succession, and ten years after his arrival in China, having served his apprenticeship all along the coast from Newchwang to Canton, he returned to the legation as accountant in 1886, and in this year attended, as one of Sir Thomas Wade's suite, the second Imperial Audience granted to foreign ministers in the history of China; and there for the first time saw the Emperor Kwang Hsü seated in state and surrounded by all the panoply of the Manchu Imperial Court. He remembers principally that there was a great deal of formality and very little said, and that everyone was pleased to have the ceremony over with after the endless negotiation and bickering about small ceremonial details, the place of reception, and other matters which were considered of the greatest importance in those days. He remembers seeing Tso Tsung-tang, whose military genius restored Kansu and Turkestan to the Chinese Empire, and was impressed by the modesty and quiet manner of the little General. Prince Ching, who afterwards rose to supreme eminence in Chinese affairs, still figures in Sir John's recollections as a young man of small stature, remarkably neat and dapper in his dress, with a fresh complexion and bright red cheeks.

For ten years Sir John was a student at the legation in Peking, and was successively Accountant, Acting Assistant Chinese Secretary, Acting Chinese Secretary, Assistant Chinese Secretary, again Acting Chinese Secretary, then Chinese Secretary, and finally Second Secretary of the Legation. During this period no great questions arose, and there were no such stirring times as were to follow immediately before and after the Boxer trouble, but diplomacy in China at that time presented peculiar difficulties, and at the same time, as Sir John points out, peculiar compensations.

The Tsungli Yamên, the Office of Foreign Affairs, was still little more than an innovation, and the high Chinese dignitaries who were forced to assemble there and debate matters with the diplomatic agents from abroad, were not inclined to make things easy for such people as interpreters and secretaries. In those days many of the high officials were from Hunan and other Southern provinces, and spoke atrocious dialects. They would open a question and discourse upon it to their hearts' content, and then when a reply was made, and the unhappy Chinese Secretary, who was acting as interpreter, was making his best effort to put his response into good and effective Chinese phraseology, the high ministers of state would gossip about their dinners and their clothes, asking the price of each other's silks and furs, and otherwise making matters as distracting and embarrassing for the speaker as possible.

Sir John chuckles about these sessions now, and since he has always had a very genuine sense of humour, he probably chuckled in those days after his irritation had worn off, but it was in those gatherings that he acquired a distaste for Chinese pettyfogging, which has since inspired him to insist upon direct and straightforward discussions in the Waichaiopu. Sir John still protests, however, that there was some satisfaction in fighting things out in the old Tsungli Yamên because when you had once reached a decision, you felt fairly certain that the matter would go directly to the Emperor, and would receive his sanction, and in those days that was really the end of a question. When you saw the edict come out with the Imperial Seal upon it, you knew that there would be no quibble or debate from the provinces, and that the settlement of whatever case you had brought up, was thenceforth law in China. "It is very different now," says Sir John, significantly.

China's Humiliation by Japan

The next ten years of Sir John Jordan's life were spent in Korea. These were ten of the most interesting and thrilling years of China's modern history—the period of the old Empress Dowager's real autocracy. It was during this period that the reformers influenced the Emperor, and tried to inaugurate radical changes in the Manchu regimé, for which the Emperor was incarcerated and the reformers either decapitated or exiled. The great Boxer movement, the period of foreign concession hunting that preceded it, and the period of chastisement for China that followed, all came within the epoch of Sir John's diplomatic work in Korea.

Before he left to take up his post as Consul-General at Seoul, however, he witnessed from Peking, China's great humiliation at the hands of Japan. The Sino-Japanese War of 1894 was a great humiliation for China, and as Sir John says, it was after China's defeat that Chinese officials first began to think and talk in terms of millions. The elder Prince Kung, who had been in disgrace for some years, was recalled during the war, to favour, and took some part in the peace settlement. Sir John remembers this old man's consternation when it was announced to him in a conference, that China would have to pay Japan an indemnity of Tls. 230,000,000. The old man was very nearly in tears, and he made vain efforts to comprehend the figures, first in his mind and then on his fingers. Sir John contrasts this attitude of the Manchu guardian of the Exchequer, with the modern Chinese financier, who contracts loans simply by talking glibly in millions, and has no idea who will pay the interest, or who will repay the principal. The Manchus at least felt some public responsibility for the money which they handled, while the modern Chinese financier, as Sir John points out, lacks the same sense of responsibility, and is content in the realization that he will not be in office when the time comes for repayment.

It was about this time that Sir John knew and saw much of Li Hung-chang. He remembers him as a somewhat overrated and very conceited official, whom he personally holds responsible for initiating a system of Chinese diplomacy which he feels sure was the direct cause of China's collapse and humiliation Li was the man who inaugurated the Chinese game of playing one power against another, of making small concessions to each in the hope of getting substantial support in resisting the claims of the others; and he regards Li Hung-chang's trip to Russia, when he is said to have signed the mysterious Cassini Convention, as China's first great diplomatic *faux pas*.

Delightful Reminiscences of Korea

In Korea, Sir John Jordan was first appointed Consul-General, then in 1898, he became Chargé d'Affaires at the Korean Court, and in 1901 was appointed Minister. At the time of Sir John's arrival in Seoul, the Russians were busy trying to discomfit both the Chinese and Japanese. This was the period in which all foreign powers were busy pledging themselves to maintain the integrity and independence of Korea, and during which the Korean potentates were equally busy trying to propitiate any and everyone who could help them in their troubles with both the Chinese and the Japanese.

Sir John Jordan first met the Emperor of Korea in the bathroom of the Russian Legation, where the monarch was then in sanctuary. This was immediately after the murder of the Queen of Korea, and His Imperial Majesty was not inclined to reside in the Palace, so had taken refuge with the Russian plenipotentiary, who had accommodated him with quarters. Many things which have since been advertised to the world as gross burlesques upon government and justice in China, Sir John first saw in Korea. Bribery, corruption and intrigue were the daily order, opium was the national curse, and the farce of adviserships was played as it has never been played in China. Anyone who happened along and could get an introduction at Court, in a good suit of clothes, could get an advisership at $300 a month and a house. It was a regular thing in those days for retired French officers from Indo-China, who did not care to return to their homes, to come to Korea and take service with the Government in advisory capacities.

Sir John remembers, with no little relish, the unique figure of General Clarence Greathouse, an American who had once had some standing and reputation in San Francisco, and who contrived to gain no little influence over the Korean Emperor. For some years after Sir John's arrival in Seoul, Russian diplomacy was energetic and insistent, but after the Russians had obtained their lease of Port Arthur, they were less interested in Seoul, and a Military Guard which the Russian Minister had supplied to the Emperor, was withdrawn. General Clarence Greathouse then conceived the idea of having an International Bodyguard for

the Emperor. He called at the Palace, had a Mandate drawn up authorizing him to enlist such a guard, and persuaded the Emperor to affix his own great black seal to the document. He then went to Shanghai, and enlisted, on the authority of the Emperor of Korea, twenty-seven picked men of various nationalities, all of whom were persons of education and previous good repute, who for one reason or another had turned soldiers of fortune or gentlemen rovers Each was given a year's contract and one fine day General Greathouse appeared in Seoul with twenty-seven handsome young men, arrayed in frock coats, and all the appurtenances of fashion, and proceeded to introduce them at the various legations. Some were Americans, some British, some French, and there were some of other nationalities. Five of them were British, and when General Greathouse lined them up in Sir John Jordan's reception room, the five British members of the guard, were in the foreground, and the General made a little speech, which he opened in this fashion: "Here they are, Mr. Jordan, fit to grace any lady's parlor," and as Sir John still admits, they certainly looked the part, and acted it. At the end of the day General Greathouse was congratulated upon his achievement, and all Seoul was prepared to receive the guardsmen into its most select social coteries, but the guardsmen had other plans and displayed other inclinations. They proceeded to paint the Korean capital red, and celebrated their arrival in a fashion which was absolutely unprecedented, even in a town which had entertained a Russian bodyguard. Day and night for three weeks the city reverberated with their festivities, and General Clarence Greathouse was driven nearly to distraction, trying to round them up and refit them for the parlors of Seoul. In this he failed utterly, and after the various legations had conferred upon the matter and had consulted with the Korean Emperor, the twenty-seven gentlemen were paid their salaries for a year and were requested to leave, their riddance being considered cheap at any price.

While Sir John was British Minister in Seoul, he was also China's chief diplomatic representative in that capital. In this capacity his chief collaborator was Mr. Tang Shao-yi, and Sir John gratefully testifies that he was a most assiduous and conscientious worker, correct in all his attitudes, and extremely helpful in every respect. It was during these ten years that he came to know and greatly admire Marquis Ito and Baron Hayashi. He and Hayashi became fast friends and he has continued to be a staunch admirer of this conscientious Japanese diplomat. He firmly believes that if Baron Ito had lived, Japan's policy on the mainland, would have been utterly different, and that Hayashi has been called upon to play a part, both in Korea and China, which is directly counter to his principles.

In Korea Sir John learned to have the same sympathetic interest in that country's welfare and in the Korean people which he has since displayed in China. He says that the power of the Koreans to demonstrate, and to organize the kind of pacific resistance which is now baffling the Japanese administration, has been no surprise to him, and that even in the old days it was the custom for the populace to come and sit in silent masses before the Palace, by way of protest against measures of which they did not approve. Opium and official corruption had, at the time of his residence, however, eaten into the very fibre of their Government, and their officials showed pathetically little ability as executives. There is no doubt that in his attitude towards evils and malpractice in China, Sir John Jordan has always had in the back of his mind his knowledge of Korea and the reasons for Korea's downfall. If the Chinese had as good an understanding of Korea's modern history as Sir John has, they would perhaps be as impatient of their own tendencies towards degeneracy as Sir John Jordan has frequently been.

The British Legation at Seoul was withdrawn in the early spring of 1906, and Sir John Jordan went home on a furlough. On May 31, 1906, he was appointed Minister to China. From this position he was practically retired in 1916. It will be observed that his career up to this time was marked in even decades He served ten years' apprenticeship as Student Interpreter, Vice-Consul, and the like; then ten years in the legation doing routine work of the Secretariat; then ten years in Korea, and finally ten years in China as Minister. Throughout these forty years he had been regarded as an exemplary British official, scrupulously careful of British interests, and an efficient official agent. The few years which Sir John Jordan has served over these four decades, have been sufficient to give everyone in the Far East a very different impression of him from anything gained before, and have really been the years in which he has come to be appreciated. It is well to emphasize this before returning to a review of his career as Minister from 1906 to 1916. It is on his achievements in these ten years that Sir John Jordan himself dwells when he is reviewing his own career, which by the way, he does with peculiar reluctance, and with a marked disinclination to say anything about himself. If you were to ask him pointblank what he has done for China, he would reply with some hesitancy that the two achievements which have really given him satisfaction are the suppression of the opium trade, and the establishment of the salt gabelle. Without any view to belittling these works, most of his intimate friends would probably agree that he has made a much deeper impression upon China, and has had much more to do with the construction of a vital British policy in China, during the few years that he has been back from what was popularly believed to be his retirement, than in all the previous four decades. This will bear later discussion.

Sir John's Idea of Yuan Shih-kai

During the period of his ministry in Peking, nothing made so profound an impression upon Sir John Jordan's mind, not even the revolution, as the personality of Yuan Shih-kai. Sir John believes that he is the greatest Chinese whom he has met in China during his long residence, and that he was the most sincere Chinese patriot. While we were walking circles about the tombs of the Empress Dowager's ancestors, west of Peking, a few weeks ago, Sir John said with unusual energy and conviction: "That man would have given his life for his country at any time, and in fact he did give his life for his country at the end." The British Minister had an intimate knowledge of all the negotiations which ended in the final abdication of the Manchus, and the creation of the Republic. He avers stoutly that at this time Yuan Shih-kai showed every consideration for the Manchus, that he made every effort to stave off the collapse, and that realizing the trend of Tang Shao-yi's negotiations with the South, and the growth of support to the Southern cause, he was most earnestly concerned with making good terms for the Manchus, and that he had little or no desire to be President of the new republic. In the initiation of the monarchy movement, Sir John believes that Yuan Shih-kai himself had little part, and that he was the victim of the machinations of his trusted agents. While the monarchy was under consideration, Sir John's advice was frankly sought, usually by the men who were the most insistent advocates of it, and in his interviews with these agents, Sir John consistently advised against Yuan's assumption of Imperial dignities. He believes that Yuan Shih-kai's death was almost deliberate, that he died because he felt that he

had made a mistake, and that he was an obstacle to China's further progress. He describes Yuan Shih-kai as a man of supreme administrative ability, and of a profound understanding of China's fundamental needs. He does not believe that he was an intellectual giant, but he persists in his conviction that he was more far-sighted and more patriotic than any Chinese official whom he has ever known.

The Great Anti-Opium Campaign

If there is any one material achievement for which every Chinese should remember Sir John Jordan gratefully, it should be the abolition of the opium trade. Moral and spiritual services are intangible; it is soon forgotten, as one set of officials succeeds another, that a man by precept or advice may have rendered valuable service, but when an end was put to the opium traffic it was as visible and as marked an accomplishment as a victory in open battle and in this particular feat good generalship was as conspicuous as it ever is in war. For several generations Great Britain had doggedly maintained the right of her traders to import opium into China. This stand had been taken when the ships and merchants of all nations participated in the trade and when all commerce in China had to be protected by gunboats. But in latter years the bulk of the opium imported was grown in India, British subjects had almost a monopoly upon the import and of course Great Britain bore the whole burden of the responsibility for making the drug available to the Chinese people. The interested merchants argued that opium did the Chinese little or no harm in the first place and that the growth of native opium was unchecked throughout the provinces so that a restriction of the import would simply be a restriction upon free competition and would prove of no benefit to China.

Sir John Jordan had his own ideas about the effects of opium upon the Chinese people. He had lived in too close touch with the Chinese to be deceived by any specious arguments about the harmlessness of the drug to Orientals, and for years he worked to reach an understanding with the Chinese by which they would agree to suppress native planting as foreign imports were decreased. In 1911, after a long diplomatic battle with the Indian Government, which at first opposed his plans stubbornly, Sir John had the satisfaction of signing an agreement with the Chinese Government which provided for a schedule of reductions in imports and in native opium growing which was to have extended over a period of ten years. The Chinese were given an opportunity, however, to hasten the suppression as they saw fit, and in the ensuing years Sir John provided for inspections of the provinces by British consular officials and did everything in his power to keep the Chinese to their part of the bargain. That they did stick to their bargain and that they did remarkably well is a tremendous satisfaction to the retiring Minister as he looks back over his career. Opium is not gone altogether from China, but the British trade is at an end, and while native opium is grown in remote districts and under the protection of corrupt officials, still Sir John confidently believes that it can never revive as a legitimate trade and that as the government becomes more centralized and as communications improve, the Chinese, knowing what they were able to accomplish in the past, will easily suppress all growth and traffic in the interior.

At the close of ten years' service as Minister, satisfied with having dealt the opium trade a death blow and with the reorganization of the Salt Gabelle which was achieved through the Consortium loan to Yuan Shih-kai, Sir John Jordan returned to England, ostensibly to retire. He carried with him a high regard for the men who had assisted him in the negotiations for the reforms in the Salt Administration, and was particularly grateful to the American Minister, the late Mr. Calhoun, who after giving him the strongest possible support at a time when the Germans were eager to assume the direction of the Gabelle, was prohibited by his Government from taking any further interest in the loan, from which, as everyone knows, American support was finally withheld. Sir John speaks fervently of Mr. Calhoun as one of the best diplomatic representatives which any country has ever sent to China.

Sir John's Policy Towards China

Sir John returned to London in the third year of the war and was there through the most critical period. He had not been at home long, however, when the Foreign Office discovered that he was still needed in China, and after a time he was asked to return. The announcement in a number of Far Eastern papers that he was finally retired and that there was no thought whatever of sending him back to the Orient, was not at all to his taste, and, according to his friends, had not a little to do with bringing him back.

The war which he saw at close range made a profound impression upon him. It did not in any sense embitter him or make him intolerant, but, as a naturally thoughtful man, believing in honest and just diplomacy, it made him more thoughtful and gave him greater courage in advancing his opinions upon what just diplomacy in the East should be The deference shown to his judgment at home and the prestige which his reappointment gave him very probably had their effect upon his mind and warranted him in greater independence of action and in a more outspoken statement of his opinions upon events in the East in his despatches to the Foreign Office. A rest from the immediate cares of his office and a perspective upon Chinese affairs from the homeland also gave him an opportunity to evolve clearly in his own mind a policy which made China's good coincide with the best interests of the rest of the world. He had no sooner returned to China than both Chinese officials and the foreigners who came in touch with him realized that they had to do with a much bigger man and with a much more liberal, optimistic man than they had known before, but with one no less intolerant of official sins and foibles. He made it a point to see much more of the Chinese personally, called them into conferences and debated with them, invited them to his house—the leaders of all parties and all factions—and preached to them of the course of development which he was convinced China ought to take and of the means that might be employed to advance her interests. He preached railways and other communications. he preached education, he deplored the habit of living upon easily acquired foreign loans into which the Government had fallen, and he bitterly condemned the militarists and their tactics in his country.

He was one of the staunchest supporters of the theory that no money and no arms should come into China until order and a reasonably good government had been evolved, which public opinion should control; and when the embargo was put upon arms and money last March, it was largely at his suggestion and through his diplomacy. He has had many disappointments in his long career, but none of them has ever driven him to despair. After China's failure to make good her claims at the peace conference he was despondent, but his belief in China and his conviction that no set-back could do her incurable harm, revived; and after a summer of gloom, when he was very loth to discuss international politics at all and had even less to say to the Chinese than to foreigners, his hopes revived. He saw much of the Chin-

ese about Christmas time, again bringing them to his house to argue over the whole field of politics and diplomacy with them, and in the convention, of the British Chambers of Commerce at Shanghai he took the liveliest possible interest and spoke vigorously of his policy and his hopes. He confesses that he is often disappointed in the Chinese, that the follies of the Government depress him, but he always comes back to the firm assertion that, " after all, the Chinese are a wonderful people and a good people."

Sir John Jordan is personally a man, who without the slightest assumption of official dignity or pose, has natural dignity. He is an approachable man, mild mannered, patient and deliberate in the discussion of any subject, and not dogmatic, though a firm champion of his own ideas. His sense of humour prompts him to much table talk and the telling of many anecdotes, in which, after making light of some big personage whom he has at some time seen in a ludicrous situation, he always sobers a little and in wistful retrospect recalls some good quality or some well-meaning act of the person with whose foibles he has just ben regaling his friends.

He will tell how the old reprobates of the Tsungli Yamên used to receive their foreign visitors, who were in those days ever unwelcome, in open pavilions on windy winter days and while they were snugly wrapped in their furs and rugs, take pleasure in seeing the foreign diplomats shrivel up, grow restless under the excessive cold and then beat their retreat. And when he has finished painting them in such a light, he will remind his hearers that this or that one was really a true patriot and, poor fellow, did his best for China, and that some other came to an undeserved end. He will tell how amusing it was, about the time of the Chungking Convention. to find Sir John Walsham sitting in his chair on the road to the Western hills, left to his own devices by the coolies to whom he could not talk and who had dumped him down because they were tired; and then he will soberly tell you something very fine about Sir John Walsham. His sense of humour is never of the acidy variety and mild as it is he always tempers it with some sober and kindly comment.

It is difficult to write of Sir John Jordan being missed and his going regretted without falling into an obituary tone. No one who knows him or the esteem in which he is held by his Government believes that his influence is going to be forever removed from Far Eastern Affairs. No one wishes to imply by excessive lamentations over his departure, that after more than forty years of service he does not deserve rest and relaxation from the routine duties of his office, or that by leaving China at the height of his usefulness he is leaving either the Chinese or his colleagues in the lurch; but, however, ready we may be to grant that he will be of better service at home, and that with his family, he may be happier there, we are still fully entitled to register our own personal regrets for the imminent loss of direct and personal contact with him. Those who have always looked to him to assume competent leadership in every big work that was to be done in Peking, those who have gone to him for moral support in difficult times, those who have taken their theories and their schemes of reform to him to have them tested in the alembic of his superior experience and his perfect understanding of Chinese affairs, will all miss him, perhaps more than many of them anticipate. Those who have chatted and dined with him, and particularly those who have walked and talked with him, whether in his brisk routine exercises on the wall or in his strolls in the country, will mourn his loss; for while the world is small and communications are remarkably good from one side of the globe to the other, those who appreciate the value of a real personality know how true it is that language was invented to disguise ideas and to conceal sentiment and how unsatisfactory it is going to a man for guidance or moral support through the medium of the mails when they are a month or more in transit.

As a British diplomat in China Sir John Jordan has been particularly valuable to his country because he had personality and character, and for this reason he will be hard to replace. A marked personality is of more value in China than in any country in the world. The right man can settle in a few minutes' quiet discussion with a Chinese official what a whole commission of technical experts of commonplace stamp cannot do. A single diplomatic agent who has the happy faculty of making a deep impression upon the minds of the Chinese whom he meets is worth more to a Government than the most elaborate consular system. Sir John Jordan has always had this faculty and for this reason his going is a particularly heavy loss to British interests in China. He was a man who could get things done because he was one whom the Chinese could not dismiss from their minds and ignore. For this reason as much as any other, hundreds of Chinese are going to regret his home-going deeply and sincerely, and for the same reason, many others, whose careers and motives will not bear inspection, are going to rejoice

There is bound to be a time, however, when all of China will see Sir John Jordan's career in perspective and will appreciate his services. They will not only realize that he made possible the reorganization of their Salt Administration, that he did away with opium, that he gave his moral support to the revolution and fostered democracy, that he opposed Yuan Shih-kai's flight at the throne though he admired him more than any Chinese whom he had ever met, that he gave every encouragement in his power to the extension of railways, education and to the liberal expression of public opinion in China, that he dropped from his consideration the matter of Spheres of Influence and upheld with all his strength the independence and integrity of China—they will not only realize and appreciate all this, but they will also understand that he has been a powerful factor in reshaping foreign policy in China and in making it apparent to the Occident that a united China with a democratic government, which was in turn based upon the expressed will of the Chinese people, in whom he so sincerely believes, is essential to the advancement of all Occidental interests on this side of the globe and to the peace and well being of the whole world. This has always been his creed and his policy, but in the twilight of his career, enjoying the confidence of his own Government and the prestige of a white haired old gentleman in China, he has been able to devote nearly all of his time and energies to the shaping of British policy in conformity with these ideas, and in so doing has done China a service which will never be fully appreciated until the strong central Chinese government of his dreams has actually come into being in response to the demand of an enlightened Chinese people.

Mr. Frederick Moore has been selected to manage the publicity campaign for General Wood in connection with the U.S. Presidential election. This selection comes as gratifying news to his old friends in the Far East where he served for several years as correspondent of the "Associated Press." During the war he was in France as correspondent of the "New York Tribune," and won great credit for his exceptionally able work at the Peace Conference.

China's Engineering Feats; Her Rivers and Roads

ACCORDING to ancient custom most ideas in China come in fives. One might substitute "funf" for "drei" in the German saying and apply it to Cathay. Life consists in the five relationships: between sovereign and subject, husband and wife, parent and child, brother and brother, friend and friend.

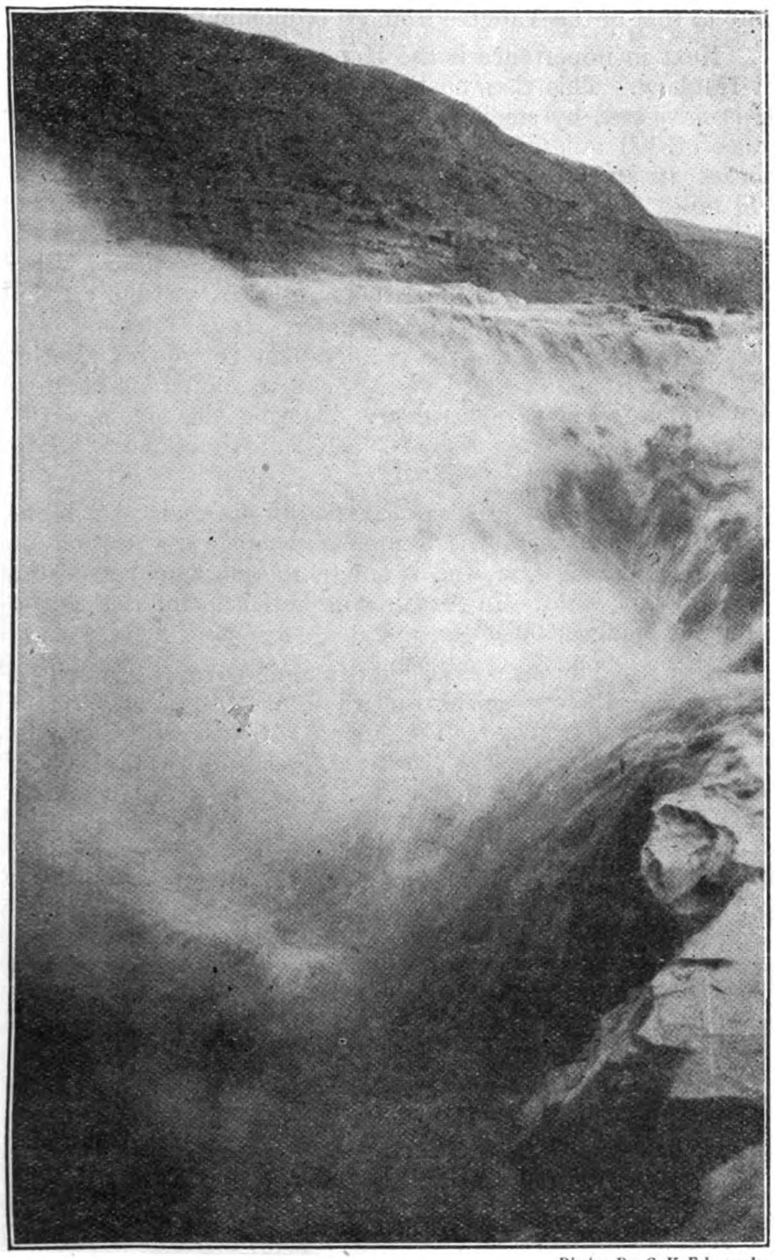


Photo: Dr. C. K. Edmunds.

China's Niagara

The Yellow River tumbling into a narrow gorge and forming the Lungwang (Dragon King) Falls.

There are five classes of society, five orders of nobility, five rites, five degrees of mourning, the five-clawed dragon (which doesn't exist) and the so-called five-colored porcelain (which isn't five-colored!). There are the five elements: metal, wood, water, fire, earth; though the all surrounding air is omitted! There are the five senses, the five virtues, the five planets, five colors, five musical notes and the five classics, the learning of which by a cast-iron method has in several hundred years wasted enough energy for ten millenniums of true education. There are the five races, the five cereals, the five seasons and of special value to the traveller the five points of the compass: North, East, South, West and Centre; indicating that it is just as important to know where you are as it is to get your direction!

Thus writes Dr. Charles Keyser Edmunds, PH.D., in an extremely interesting paper, published in the "Journal of the North-China Branch of the Royal Asiatic Society, on his journeys through China as Observer-in-charge of the Magnetic Survey of China, Carnegie Institution of Washington, 1906-1917. Dr. Edmunds entitles his paper "Thirty Thousand Miles in China," and under the risk of being considered too artificial presents his subject according to the ancient rule of five as mentioned above.

From his paper we take the liberty of reproducing a few outstanding facts of general interest.

He gives as the five sacred mountains: Taishan, in Shantung, Hengshan in Hunan, Wutaishan in Shansi, Omeishan in Szechuan, and Hwashan in Shensi. All of these he has visited. Omei is the highest (10,000-ft.), and affords the greatest variety of scenery, Hwashan (6000) presents the most interesting ascent because of the steepness of the artificial way prepared for devotees, while Taishan (5000) has the most valuable historical connection with China's Chief Sage, Confucius, who ascended this mount about 500 B.C. Each bears numerous temples and each is visited annually by thousands of pilgrims from near and far.

China's Five Great Engineering Feats

In his travels the five great engineering feats of the Chinese were inspected by Dr. Edmunds, and these he gives as follow:—

1.—The Great Wall, begun as early as 240 B.C. and added to as late as A.D. 1547, to keep out invaders who nevertheless have made an effective entry, has been followed for long distances in widely separated sections of its tortuous course of 1,250 miles.

2.—The Grand Canal, the oldest and longest artificial waterway in the world, built in three sections in three different periods (from 550 B.C. to A.D. 1283) and finally completed for the inland transport of grain from Hangchow in the South to the Capital in the North, has been traversed practically from end to end of its 1,000 miles, in spite of the dilapidated condition of its northern section.

3.—The Hangchow Bore Wall, built about A.D. 915 and still protecting millions from a twice-daily flood from the sea, has, though less known impressed me as worthy of a greater share of fame than the Grand Canal or the Great Wall, because of the dynamic difficulties to be overcome in the construction of 180 miles of a wall which so effectively shuts out one of the most gigantic and powerful tidal bores in the world.

4.—The exceedingly clever and extensive irrigation system of Kwanhsien inaugurated probably about 200 B.C. and still responsible for so much of the prosperity of Szechuan has been investigated from the headwaters of the Min that feeds it to the by-canals of the Chengtu plain where it supports millions on what would otherwise be barren land.

5.—The brine wells of Tzeliutsing also in Szechuan, sunk *by hand* to a depth of 3,000 feet and operated by crude machinery with water-buffalo as the motive power have been seen and marvelled at. Dating, as some of the wells do, from as early as A.D. 250 this region still supplies an enormous quantity of that most essential commodity, which in China is the Government's one monopoly, salt, which under the recent administration of Sir Richard Dane has added so greatly to the nation's revenue.

Note, please, three significant characteristics of these engineering feats : Each is of fairly ancient origin ; each is of great magnitude ; and each is a work of utility, all but one (*i.e.* the Great Wall) being of important use to-day. Contrast these with the useless monuments which the ancient Egyptians

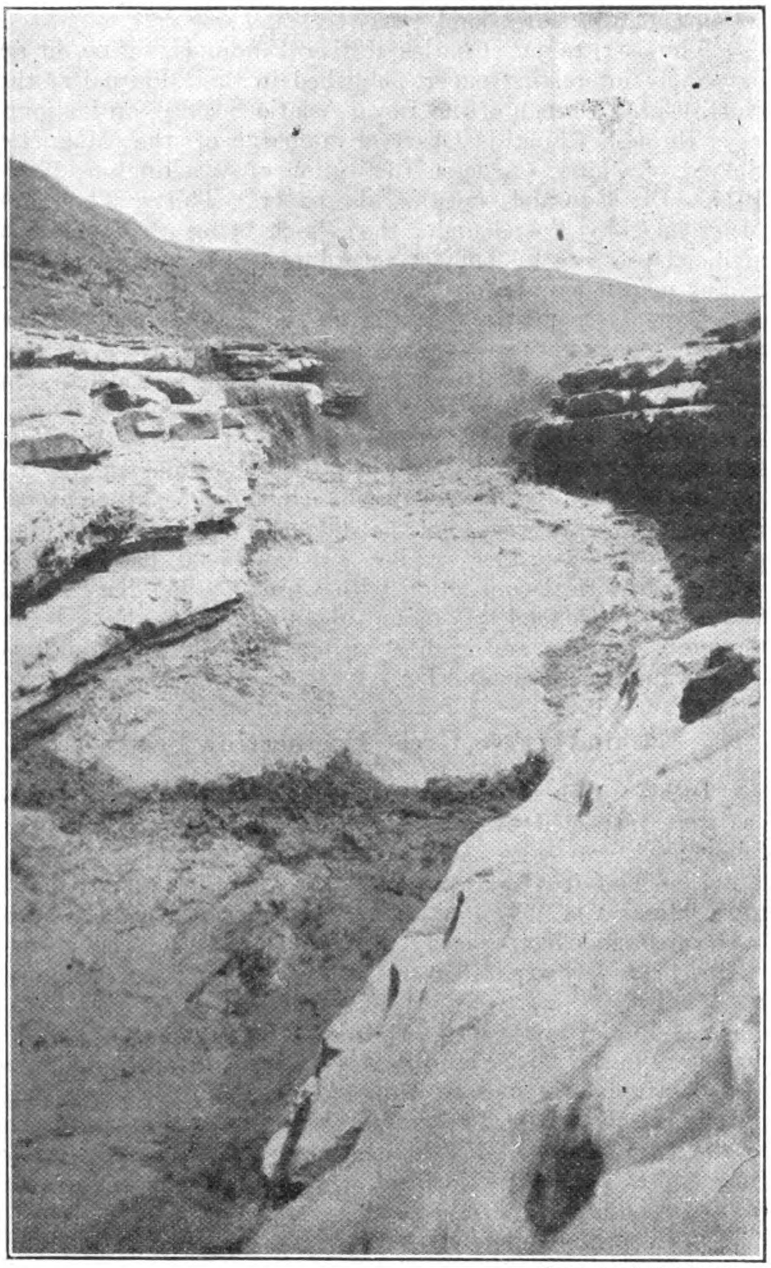


Photo : Dr. C. K. Edmunds.

The Gorge at the Lungwang Falls

It is estimated that the water is 200 feet deep in this narrow gorge which carries the whole volume of the Yellow River.

have left as marks of their former prowess and you will readily admit the superiority of the Chinese. Remember too that the Chinese are the only great nation to-day that has survived from any remote past.

The Five Rivers of First Importance

Waterways both natural and artificial are tremendously used wherever available and China for the most part is well supplied. Of rivers one thinks first of the mighty Yangtze, a veritable aorta of trade that traverses the entire width of China proper from Tibet to the sea, and is navigable for ocean-going vessels for 600 miles, by smaller steamers for 400 more and by still smaller steamers for another stretch of 400 miles, while junks of fair size can proceed still another 100 miles or so. The navigation beyond the first 1,000 miles is, however, quite precarious.

We think secondly of the Si Kiang or West River and its tributaries in South China. Rising in Yunnan this stream is a great river by the time it reaches the Kwangsi-Kwangtung border. Marked in its upper and middle courses by fine gorges and in its lower course by a magnificently fertile delta, it is navigable for coasting vessels as far as Canton and for smaller steamers as far as Wuchow while launches ascend the higher courses of its tributaries as well as of the main stream for another 150 miles or so and smaller craft go clear to the Western boundary of Kwangsi and to the Northern boundary of Kwangtung. This river system is second in importance only to that of the Yangtze from an economic point of view.

Next in importance is the Han, which joins the Yangtze at Hankow. This rises on the Shensi-Szechuan boundary. It is navigated by small steamers as far as Siangyang a distance of 300 miles, and during summer by cargo boats and houseboats and by smaller craft in all seasons up to Hanchung 600 miles further. In its course across Shensi it traverses abrupt gorges and its bed is rock-stream. It becomes readily navigable only at Laohokow where it widens rapidly to a width of 2,600 feet. Further down it again narrows and at its mouth is but 200 feet wide in low-water season. In this lower part of its course, it has the peculiar feature enjoyed also by the Yellow River, of a bed higher than the adjoining plain so that embankments are necessary. During the summer the water-level of the Han rises 20 feet, sometimes more, above the adjacent plain.

Of the Yellow River one can hardly speak as of a highway ; for the most part it is useless except as a means of drainage and irrigation, and is one of the most unmanageable rivers in the world. In length it is but little inferior to the Yangtze, being 2,500 miles.

Rising in Tibet it is already a stream 200 yards wide when it enters north-western Kansu where its bed is 8,000 feet above sea level from which it drops 5,000 feet in its north-easterly passage across the province. From Kansu the Yellow River runs north to the high land of Mongolia where its course is changed to almost due east. At Hokow the river turns sharply to the south and continues in that direction for about 480 miles until it is joined near Tungkwan by the River Wei and turns again sharply to the east.

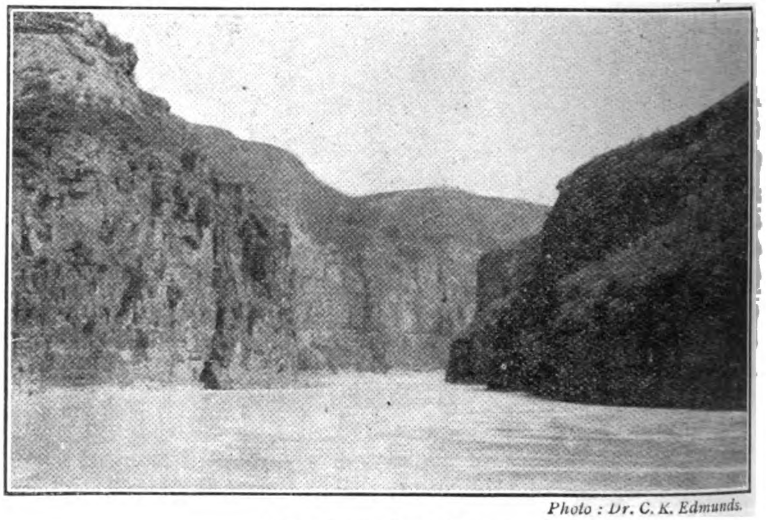


Photo : Dr. C. K. Edmunds.

The Yumenkow Gorge

The Yellow River has its gorges as well as the Yangtze. This one is ten miles long.

The Wei rises in Eastern Kansu and flows south-eastly to Shensi, and crosses that province in a nearly straight line from west to east. Its well-watered valley was the birth-place of Chinese civilization and is full of relics of the past. It has also the reputation of being the most fertile land in China.

About nine miles from the river on its right bank, and half-way across the province, stands the great city of Sian.

The Yellow River

At the Tungkwan bend the bed of the Yellow River is still 1,300 feet above sea-level At the Sanmen rapids, which no boat can ascend, the river again enters the hills, to leave them finally at Mengching, a place above Menghsien, in Honan, about 200 miles below Tungkwan. Here the great river, running from four to six miles an hour, finds itself on the level plain, with still 400 miles to go before it can reach the sea.

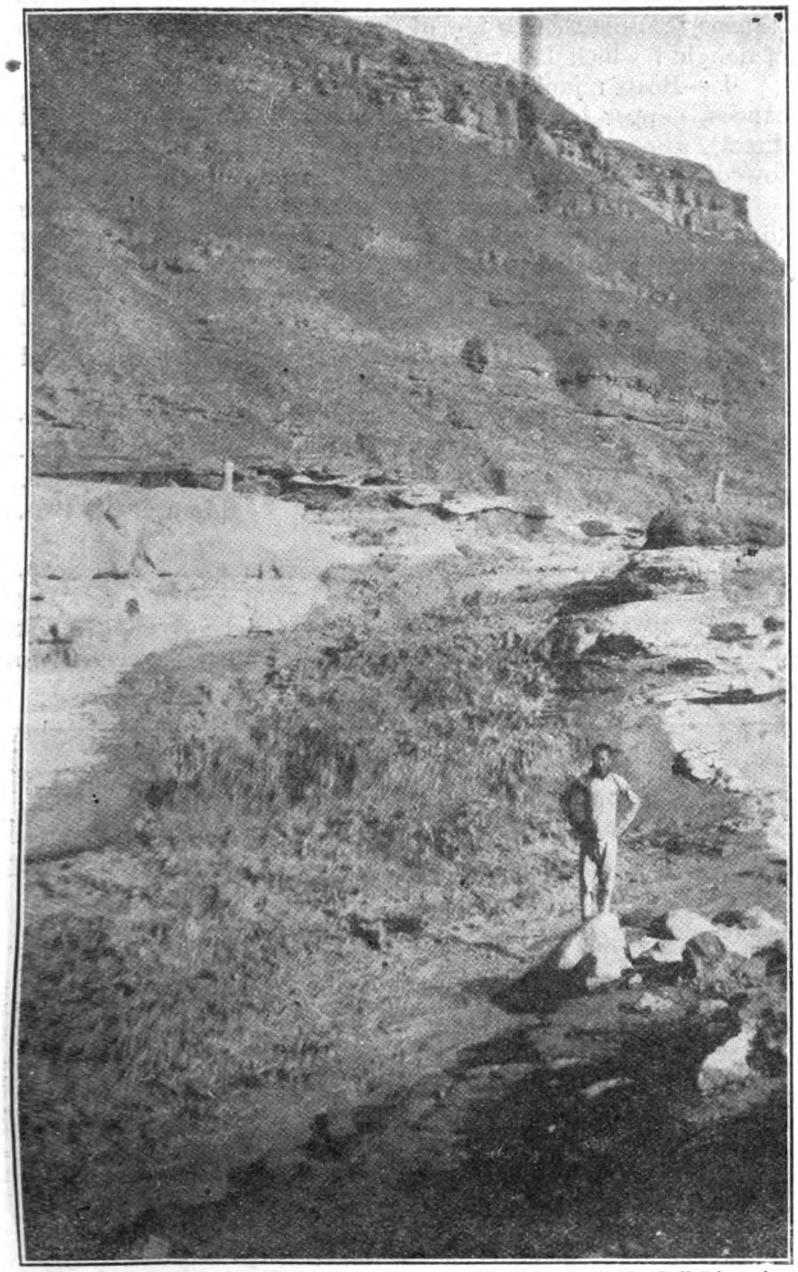


Photo: Dr. C. K. Edmunds

A small fall down which boats are lowered. The two posts at the top of the cascade are used with hawsers for the lowering of the boats.

This is where it is most to be dreaded, because the mud and sand carried down by its stream have actually raised the bed of the river until it is several yards above the level of the surrounding country. Consequently there are few important towns on its banks. At its crossing with the Grand Canal, its bed is 16 feet above the level of the Canal.

During the whole known historical period, this river has frequently changed its course for the last 350 miles. These changes have swept over a fan-shaped area of 60 degrees in one of the most densely populated and highly cultivated regions in all China, and have, consequently caused great loss of life both directly by flood, and indirectly by consequent famine through destruction of standing crops as well as of stored food supplies. This has earned for it the title of "China's Great Sorrow."

To hinder its overflowing, embankments hem it in, some nearer, others farther, ranging one behind another at variable distances. In this manner, if one gives way, another prevents the inundation. In their present state, these works are still very inefficient, the dykes being weak and constructed with materials that offer insufficient resistance.

China's Niagara

Nowhere throughout its length is the Yellow River navigable without difficulty. Its highest reaches are rock strewn and only rafts can be used with any degree of safety. In the long southward reach between Shansi and Shensi navigation in crude boats can be accomplished downstream but only with considerable difficulty owing to the many rapids, and at one point navigation is completely interrupted by the young Niagara of Lungwang or Dragon King, 250 miles below Paote. Above the falls the river is about 200 yards wide, and the channel is broken up by rocky ledges. The bulk of the water, a tumbling mass of a coffee colour, flecked with foam, plunges into a narrow crack in its bed near the Shensi shore. The depth of the fall is about 60 feet, but the bottom is a seething cauldron which cannot properly be seen owing to the clouds of spray that rise from it. The remainder of the water falls into the same fissure at right angles to the main fall in a series of cascades 500 yards long. There is a spot some distance below the fall where, standing on the roadway by the river-bank and looking upstream, one sees a cloud of blue mist rising from the middle of the water without apparent cause, while at one's feet the whole volume of a great river rushes for three miles down a narrow canyon in places not more than 15 yards, and nowhere more than 40 yards wide.

A day's journey below the falls is the famous Lungmen gorge, ending in the straits of Yumenkow. This gorge is about 10 miles long. The river is a deep, still stream 150 yards wide, and races between precipices of reddish-grey sandstone 800 feet high. Above the precipices the cone-shaped tops of the hills covered with green scrub rise for another 800 feet. At Yumenkow the banks contract to 50 yards, and upon each side of the strait there is a fine temple. Coming down-stream, when one's boat rushes through this strait there is a striking

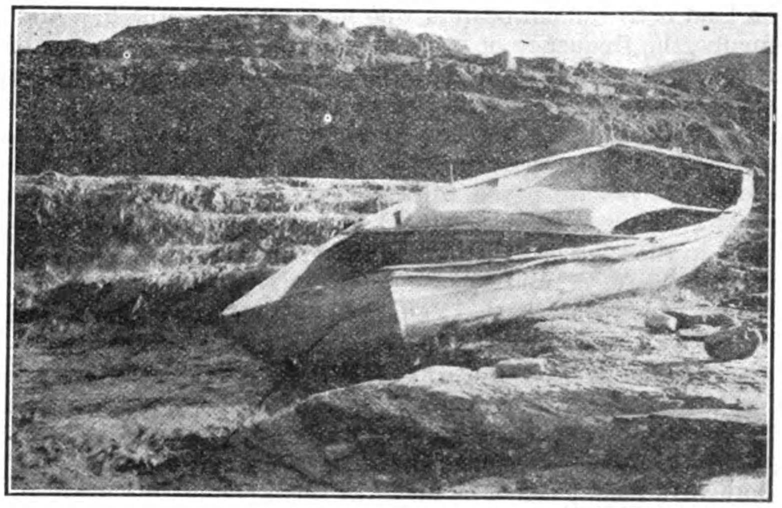


Photo: Dr. C. K. Edmunds

A Boat on its way Down the Falls

These boats are made on the Upper Yellow River and are floated down to Honan Province, laden with products, and are there broken up and sold as lumber. The planking is about 1½-in. thick.

transformation, the river suddenly leaving the hills and spreading out over a sandy flat to a breadth of three miles.

At Yumenkow coal brought by mulepack from the mines of Southern Shansi is loaded on so-called "Honan" barges, curiously bedecked with bells, which carry their cargoes to Tungkwan and also up the Wei.

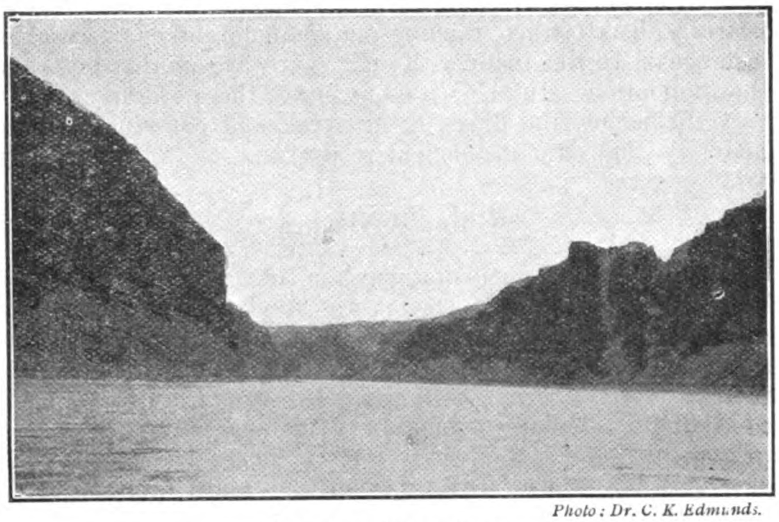


Photo: Dr. C. K. Edmunds.

A Yellow River Gorge

This view is taken between Hokow and Paotao, the formation being red sandstone.

In its lower reaches the Yellow River is really navigable only in two stretches: to the north of Honan and in the last 25 miles of its course. But even in these parts shoals prevent boats except of very light draft from passing. The control of the Yellow River is to-day one of the most pressing of China's physical problems. Experience has shown that the dyking of such rivers is insufficient and almost futile.

Five Kinds of Highways

There are five principal kinds of highways in China, just as elsewhere in the world; though up till now the relative importance of certain ones is much greater in China than in most other countries: Waterways, footpaths, pack trails, cart roads and railways. Roughly speaking China is a country of no good roads. The chief reasons are not far to seek. In the great delta regions of the West and Yangtze Rivers, in the best sections of the great plain and in Szechuan, land is so valuable for cultivation that as little as possible is spared for highways. Then, too, these are the very regions where the population is so dense and labor so cheap that most transport on land is by human bearers who need only a footpath. And, finally, the frequency of waterways on which the cheapness of transport in boats of all sizes controls the situation for both short and long hauls even up stream.

In the south the highways are mere "single-file" footpaths on the tops of low ridges between cultivated fields. In some sections these are paved with stone slabs. The only native carts I have seen south of the Yangtze are the long slung ox-carts in the southern part of the Island of Hainan and the high hung ox-carts of mid Hunan, and of these the chief part is their "squeak." In the Yangtze basin, Central China, and especially Shantung, wheelbarrows are used both for passengers and for goods; and some of these affairs are veritable "ships o' the land." In some sections of the Chengtu plain in Szechuan smaller one-passenger low slung barrows were encountered and used, though the sedan-chair is the "palace car" here as in most parts of China. In these regions the roads are generally wider than in the south, but hardly any better.

In the north generally, both east and west, carts are much used. Village and city streets as well as roads are hence of a better width than in the south. Throughout mountainous regions pack animals, usually mules or donkeys, are used, though in some regions human carriers alone can negotiate their way. While across the desert regions camels are the monarchs of the road.

In some regions, as in the loess country, the roads have become deep ruts worn below the general level of the land to a depth of 10, 20, 30 and even 70 feet! And these in the dry season are dusty beyond description and in rainy weather are deep in mud of a peculiar stickiness.

Along with the development of railways China needs improved roads everywhere.

Five Sorts of Native Transport

There are, as might be expected, five sorts of native transport; some though few of them could be called transports of delight! which I have used extensively, as follows:

I.—Boats: junks, houseboats, triple-deck passage boats, canoes, slipper boats, footpower boats (2 kinds: rotary and direct), sampans, cargo boats and rafts, engine-driven, rowed, towed, yulowed, sailed and poled. In many provinces.

II.—Carts: closed and open, narrow (3 ft. 6 in.) and wide (6 ft. 8 in.), drawn by one, two or three animals (not counting the driver!) and always springless. In North China especially.

III.—Wheelbarrows: single platform, double-sided, small wheeled, large wheeled, pushed by man, pulled by man or donkey or both, sometimes aided with a sail. In Central and North China. Avoided by me as much as possible.

IV.—Bipeds: men and women, with loads carried on the back, across the shoulder at the two ends of a balanced rod, or between two carriers using one pole or two parallel poles. Sedan-chair, two, three or four bearers; mountain chair, two, three or four. In every province.

V.—Quadrupeds: Horses, mules, donkeys, oxen, cows, camels and yak; with or without pack saddles, but for riding purposes always with a foreign saddle. Used for riding, pack or draft or for carrying a chair or litter slung between two animals. In Northern and Western China.

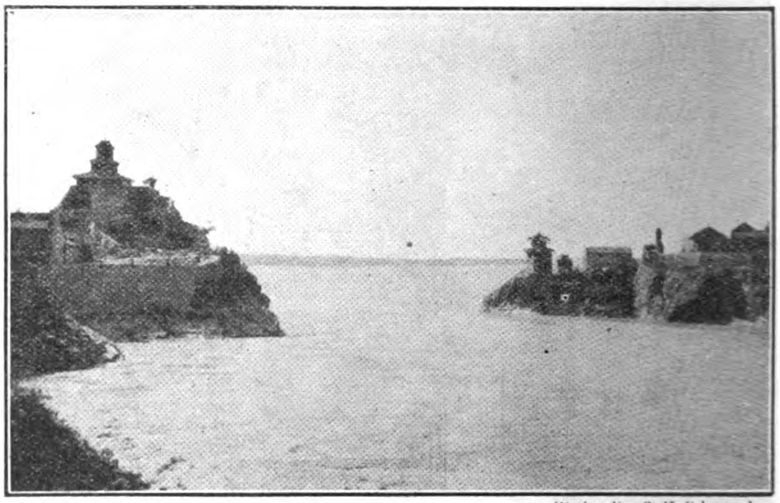


Photo: Dr. C. K. Edmunds.

Mouth of the Yumenkow Gorge

Outside the mouth of this narrow gorge the Yellow River immediately assumes a width of some five miles.

During the travel by cart, mulepack or carriers I have for the most part gone myself on foot, partly from preference and partly to insure a more gentle transport of the chronometers in my belt or hand.

One of the most remarkable developments in the way of more rapid transportation in China has been the installation of so-called "launch trains," especially in the middle and lower sections of the Grand Canal and throughout the Canton delta. For instance, in the custom house at Canton hundreds of steam launches are registered as towing between it and

neighboring cities and villages, and anywhere distant from 10 to 100 miles. These launch-trains are exceedingly well patronized both for passengers and for freight. Launch building ship-yards have been rapidly developed in Shanghai, Canton and elsewhere. But, for the more rapid and adequate development of that class of communication upon which so much depends for the building together of China, we must look to the railways.

The Outlook

Doubtless there will be within a reasonably short period tremendous development of railways in China and they in turn will have a tremendous welding effect upon the country. It is necessary that within her borders there should be developed well equipped technical schools in which the Chinese may be taught the arts and sciences necessary for the construction and maintenance of railways and other works.

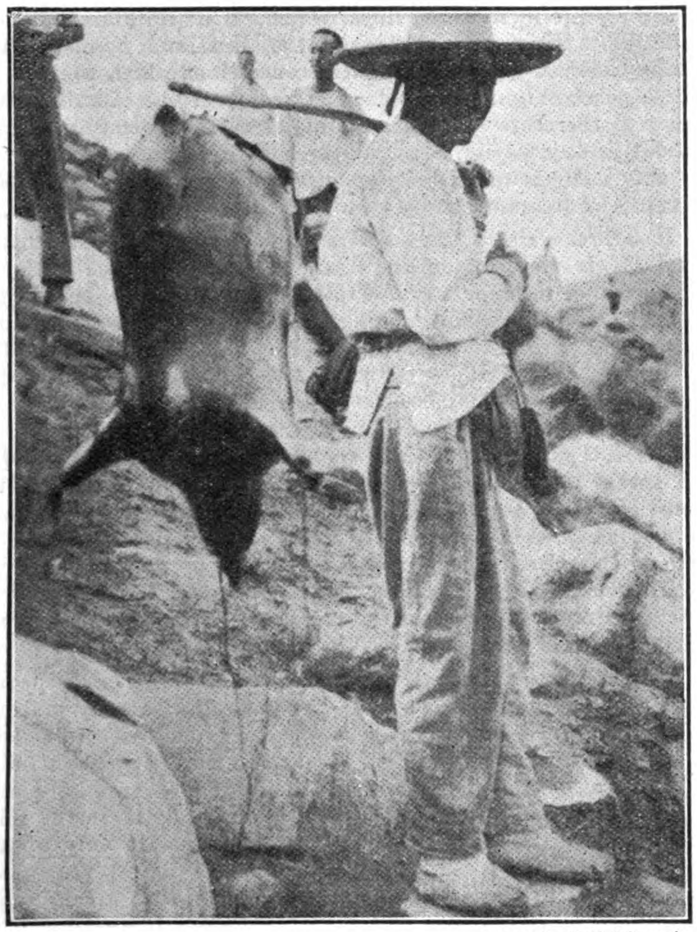


Photo: Dr. C. K. Edmunds.

The Portable Pig-skin Ferry

The natives use inflated pig or sheep skins as ferries on the Upper Yellow River. They put their clothes in a pack on their backs, straddle the skin, and paddle across stream.

There is hardly space to refer in detail to the development of the postal system or telegraph lines in China, except to point out the tremendous success with which the postal system has been developed in that full-fledged post offices with the various departments are in operation all over the country and at lower rates than in Europe and America.

Telegraph lines connect all provincial capitals with Peking and this system is being extended.

The telegraph and the postal system have already, in combination with the development of the public press in China, done a great deal toward unifying the people and may confidently be counted on for a much larger effect in the future and this combined with more adequate railway facilities will surely foster a greater feeling of nationhood and of closeness of relationship between the various provinces.

We have seen something of the various physical problems which China faces. It is significant that the greatest physical feat of the ancient Chinese, the Great Wall, which was executed to shut out foreign intruders, has been broken down in all essential respects, and China is to-day fairly ready for foreign assistance in solving her problems, if it be friendly and not predatory.

The solution of China's physical problems largely depends on education; the education of the people to furnish the background of general enlightenment and the education of the native leaders upon whom must rest the responsibility for carrying out in detail such plans as may be formed for the alleviation of present conditions.

China is destined to become one of the foremost producing nations of the world, a vast market, a huge stabilising, peaceful power if allowed to develop her great wealth in her own way. The problem of China is a world problem, culturally as well as commercially.

The issue in the Orient is sharply drawn: Independent national development for China, and continued progress of the other free Asiatic states; or the subjection of China, and the endangering of all free nationality in Asia.

The loss of free nationality in Asia would probably be a calamity to mankind.

From the higher level of human development, expansion and domination we may well feel that the world is destined to profit greatly by events in the Far East if they result in restoring to humanity the whole Continent of Asia, free to join in making the history of the next hundred years, free to be itself and to supplement, with all of good there is manifest or dormant in it, the strength and goodness of the West.

The shortest road to a partial success in this endeavor to preserve free nationality in Asia is the development of China's material resources, which will not only enrich China and the world, but will help to arouse the people from their age-long sleep; and it may be that military development consequent upon this awakening will serve to maintain the nation's independence.

"American Lloyds" in China

In the days before the war it was painful to American travellers in the Far East to have their flag on a merchant ship regarded as a novelty. It was such a rarity compared with the flags on ships of other nationalities that its appearance used to be regarded with the curiosity that any *rara avis* will produce. But things have changed. The war has spurred America to shipbuilding until she has now a great mercantile marine, with considerable tonnage plying on the Pacific. In view of this great development the American Bureau of Shipping and the United States Shipping Board found it necessary to have a representative stationed in Shanghai, and Captain W. I. Eisler has been appointed to that post also to represent the organizations in the Yangtze River ports, Tientsin, Newchwang, Dairen and other North China ports. Captain Eisler will have charge of all repairs, and accident adjustments, the supervision of the placing of contracts for salvage and repairs, and the despatch of vessels under the jurisdiction of the Shipping Board, and for this work he is eminently qualified by long experience, both in America and China. Particularly will his knowledge of China conditions stand him in good stead. At one time he was in command of the U.S. Naval repair ship on this station and was marine superintendent for the Standard Oil Co., in charge of construction and maintenance of its local fleet. The American Bureau of Shipping which is American Lloyds) collects and disseminates information upon subjects of marine and commercial interest, etc., and provides an accurate classification and registry of mercantile shipping. It was established in 1862 and finally reorganized in 1916.

American Trade Sacrificed to Ideals

A Protest Against the Consortium Loan Policy

By George Bronson Rea, M.E., Publisher of "The Far Eastern Review"

IN August, 1918, the State Department extended an official invitation to the Governments of Great Britain, France and Japan to join in the organization of a new International Consortium for the financing of China. It was proposed that all administrative, railway and industrial loans carrying the guarantee of the Chinese Government should be pooled, and the promise was held out that the American bankers would carry the British and French participations until such time as they were in a position to take them over. It was assumed that Japan would be able to subscribe to her portion of the loans.

The professed object of the new scheme is to eliminate the spheres of interest in China, and to do this effectively the international pool should embrace the following railway concessions:—

	Miles
Belgian Railways	
Tatung-Chengtu Railway	1,000
Lung-Tsing-U-Hai, uncompleted sections	800
Lung-Tsing-U-Hai, extension to Suchow	400
British Railways	
Pukow-Sinyang	300
Shasi-Singyfu	800
Yunnan-Talifu	200
Nanking-Changsha	1,000
Hangchow-Ningpo (uncompleted)	100
Nanchang-Shuichow	300
Nanchang-Chaochowfu	350
French Railways	
Yamchow-Chungking	1,000
Other Rights	300
International Railways	
Great Britain, France, United States and Japan	
Hukwang Lines—	
Hankow District to Chengtu	800
Changsha-Shuichow	350
Russian Railways	
Harbin-Aigun	
Tsitsihar-Merguen	600
American Railways	
Chinchow-Aigun—Protested	800
Siems-Carey Contracts	1,100
Do, Options	1,500
Japanese Railways	
Kaomi-Hsuchow	250
Tsinan-Shuntehfu	125
Four Lines in Manchuria and Inner Mongolia	1,200
Kalgan-Suiyuan extensions	250
Grand Total...	13,585

Deducting the Chinchow-Aigun contract this leaves a total of 12,785 miles of new railways which should be pooled under the Consortium, and for which the Chinese Government has signed loan agreements or is compromised to do so. In May last, the independent French group, headed by the Banque Industrielle de Chine, refused to include the Yamchow-Chungking railway contract and its other valuable concessions for the construction of the Pukow Harbor Works, the Yangtze River Bridge and Peking Public Utilities, now valued at $225,000,000. The Russian lines will be excluded. Mongolia is reserved against railway development, and Great Britain has definitely closed Tibet. The Pritchard-Morgan concession with its monopoly of mining rights to the entire province of Szechuan will not be included. As the result of the refusal of others to pool their concessions and to preserve her strategical position against the come-back of Russia, Japan, in September declined to pool her four railways in Inner Mongolia and Manchuria. The State Department has refused to admit the right of Japan to exclude these concessions and has requested the British Government to use its influence to induce Japan to recede from her position. It is to be assumed that equal pressure is being brought to bear on the other Powers whose bankers are holding out valuable concessions necessary to the proper elimination of the spheres of interest.

At the preliminary meeting of the Groups held in Paris, it was furthermore agreed that all concessions upon which substantial progress had been made, would be excluded from the pool. This eliminates the Lung-Tsing-U-Hai, Hukwang, Hangchow-Ningpo and the Pukow-Sinyang lines. The Consortium will then select from the remainder, those lines, which, in its opinion, will prove profitable. This will eliminate the Russian, Yunnan-Talifu, Tatung-Chengtu and the Japanese concessions which conflict with the Chinchow-Aigun line. The net result of the Administration plan will therefore be the financing of certain Group concessions without in any way eliminating the spheres of interest. For this, the State Department has promised the governments of Great Britain and France that we will carry their share of these loans.

If all the above railways are pooled, the present costs of materials, transportation and labor will call for loans at the rate of $80,000 per mile, or a grand total of $1,000,000,000. In addition, the many industrial and mining concessions will require another $500,000,000. Administrative loans for the reorganization of the government and currency reform will call for at least $300,000,000, a grand total of $1,800,000,000 required to effectively carry into practice the plans of the Administration.

It has been agreed upon by the Groups that uniform standards and specifications shall be designed for the equipment of these pooled railways, and it has been assumed that the American manufacturer is now in a position to compete on an even basis with those of the other nations forming the Consortium. The French manufacturers, however, have reserved to themselves the privilege of furnishing their quota of the materials required in China until such time as they are again on their industrial feet.

Before the war, no nation could compete on an open specification with Belgium in steel, steel products and railway materials. The parting words of King Albert when he sailed from America for Belgium, was, to the effect, that he was returning home to stimulate the output of railway materials in order to supply Europe. Belgium manufacturers have recently underbid Americans on important orders for railway supplies, and this with only about 40 per cent. of their plants in operation. In a few years, when France, now in possession of the German mining areas, regains her industrial stride, she will take Germany's place in the steel markets of the world. In the meantime, the German munition plants are being rapidly converted into locomotive and car works. The Krupp works have turned out their first locomotives and cars, and start the race with a capacity of 300 locomotives annually. The numerous British plants will soon meet the urgent requirements of their own roads and again concentrate on their overseas business.

The decision of the American bankers to throw the Chinese market open to international competition with preference to Chinese materials is rapidly being taken advantage of by the Chinese, operating with European capital. French interests have taken over the Nicolas Tsu plant, the largest Chinese engineering works in Shanghai, with the intention of enlarging them to manufacture railway equipment. British interests controlling the largest coal mines in China have formed a combination with influential Chinese officials connected with the government for the erection of steel works and railway material plants. The important car and locomotive works attached to the Japanese South Manchuria Railway at Dairen, which now manufactures most of the locomotives and cars for the main line and its extensions will be enlarged in order to compete in the open market made possible for the first time by the American policy.

There will be no favoritism under the new international co-operative plan. The American bankers will provide the funds and public tenders will be invited and an international board of engineers will pass upon each bid before awarding the contracts. Every railway material manufacturer in Great Britain, France, Belgium, Japan and China will enter into competition with the American. All pooled agreements (with the exception of the Hukwang) provide for the purchase of materials in the countries supplying the loans, preference being conceded to Chinese products where price and quality are equal. In practice, however, the French, Belgian, German, and in some instances, the British banking groups simply distributed the orders for materials amongst their manufacturers without the formality of inviting public tenders. On one of the British lines (the Tientsin-Pukow), an attempt was made to invite international competition, with the result that every car and locomotive builder in Christendom submitted tenders, precipitating a cut-throat competition that precluded any just awarding of tenders or advantage to the nation furnishing the loan.

The Hukwang agreement provided for equal competition between the manufacturers of Great Britain, France, Germany and the United States, with the result that most undignified situations were frequently created, which not only obstructed the withdrawal of loan funds from the depository banks, but greatly impeded and added to the cost of construction. A loan of $30,000,000 that should have completed 600 miles of new railway has sufficed to finish 200. This agreement has conclusively proven that although international banking groups may co-operate in complete harmony in issuing a loan, it is exceedingly difficult, if not impossible, to reconcile the conflicting national interests in the supply of materials. It is impossible for any international board of engineers to harmonize on conflicting tenders for materials and arrive at a just awarding of orders. As it was in the Hukwang, so it will be in any other impracticable international agreement which fails to provide against this intense commercial rivalry.

These trade jealousies engendered by the keen struggle for supremacy in China and other backward countries finally resulted in 1912 in the organization of the British Engineers' Association, a grouping of the most powerful manufacturing interests whose slogan was "British Loans for the Advancement of British Manufactures." The system proposed by the State Department and adopted by the American Group, was for many years employed by the French banks, who, because of the great wealth that rolled into their coffers from the thrift of the French people, and the lack of investment initiative on the part of the depositors, finally lost all sense of responsibility to the material interests of the nation. French foreign loans became purely banking transactions, benefitting only the bankers, and with no corresponding advantages to the industries of the country. Especially was this so in China. Out of a total investment of $330,000,000 of foreign capital in Chinese railways, France advanced $150,000,000, or nearly half, but the French manufacturer was permitted to furnish materials for only two lines representing a capitalization of $35,000,000. As a consequence of this selfish indifference on the part of the French banks to the interests of their manufacturers, there are no large French engineering or trading firms operating in China. It may be said that all the advantage went to the French Bank who used the savings of the French people to build up trade for other nations.

The program of the British Engineers' Association was immediately adopted by the Syndicate of French Manufacturers, which passed unanimous resolutions in the early part of 1914, calling upon their Government and Bankers to protect their interests in all future foreign loans. The effect of this new policy was felt in the organization of the International Finance and Construction Company for Chinese railways. This plan provided equal participation for the constructors and manufacturers of the four interested nations, while fully protecting the interests of China. The French manufacturers through their representative, however, advanced the argument, that as the bulk of these international bonds would be sold in the French market, their products should receive more than the stipulated quarter share of the materials. They proposed that the orders for materials should be distributed between the four nations in proportion to the amount of the bonds sold in each market. This would have given them perhaps two-thirds instead of the one-quarter share provided for. It would seem that even at this time, the French manufacturer is holding to this plan, by demanding his full share of the orders without competition, until such time as he regains his industrial feet. They woke up too late in 1914 to a realization that their interests had been sacrificed by the Foreign Office and the Bankers in making foreign loans for political purposes. It will never happen again in France.

In the British campaign for recognition of their industries in foreign loans, one of the chief complaints against the Government was its support to the loan of £16,000,000 to Japan for the reconstruction of the South Manchuria Railway. This loan, raised in England, was expended in the United States, thus permitting American railway standards to gain a firm foothold in China after years of opposition to keep them out. In both England and France the time arrived when the manufacturers in self-defense, were compelled to demand protection against the unbusinesslike policy of their governments in supporting the bankers to make political loans, that, in the long run, reacted upon their trade supremacy. And so it must be in the United States, if the American manufacturer, of railway and engineering supplies are to reap permanent benefits from the present financial supremacy of the nation.

In addition to this plan of awarding the orders for materials under open competition with preference to Chinese materials, the international board of engineers representing the banking consortium will conduct the surveys, draw up estimates and invite public tenders for the construction of the various sections. American contracting and construction companies who desire to participate must compete with British, French, Belgian, Japanese and Chinese, all of whom have practical experience in China and are familiar with unit costs. This is particularly true of the Chinese and Japanese. If the American contractor desires to participate in this work, his only chance of success is to join forces with the Chinese and Japanese. Even then there is little chance of his succeeding as this work will be controlled by the semi-official Chinese companies leagued with the authorities and managing directors, who will obtain the work as they have in the past through favoritism, politics and graft. Under this system, it is highly improbable that the lines will be well constructed.

Here again the American engineering firm is penalized by his own government without in any way benefitting China. Because of the wasteful methods of constructing railways under engineers-in-chief appointed by the Banks, the Chinese Government decided in 1914, to build their future railways under a fixed percentage or cost—plus—a fixed sum system. It is only necessary to repeat here that the administrative or general charges attached to the construction of loan built railways under engineers-in-chief appointed by the Banks averages 15 per cent. of the costs of construction, or more than would be necessary to cover the profits of a well-equipped construction company. This is due, in part, to the fact that the engineer has to perfect an organization in a few months or a year, generally from all parts of the world. No individual engineer can hope to create such an organization in such a short time and guarantee the close co-operation, loyalty and efficiency that makes for economical construction. Regardless of how good the units may be in such a scrub organization, it will remain unreliable and inefficient until years of experience have welded the units together into a co-ordinated harmonious whole.

To the ignoring of this fundamental principle by the Banks is traceable the waste, extravagance, and consequent high cost of construction on Chinese railways. There was no incentive for economy, as the Chinese had to foot the bills. If the first loan was insufficient to complete the line, a supplementary loan was issued. The only safe guarantee that the Chinese Government and the bondholders will receive an adequate security for their investment, lies in the construction of these railways by a high class experienced engineering organizations whose reputation is a guarantee to the nation issuing the loan that its prestige will be safeguarded. This cannot be assured by any one engineer-in-chief whose temperamental disqualifications may impair the prestige of the lending nation and destroy for many years its opportunities for further profitable work in China. Although these old methods may be more or less disguised under an international board of engineers-in-chief, the evils will be perpetuated.

Notwithstanding all arguments to the contrary, we place it down as an unalterable axiom, that it is impossible for six engineers representing the interests of six manufacturing nations to harmonize on any scheme of this nature, unless provision is made at the outset for the proper distribution of materials and the construction of the lines between the various nations, where they will not come into conflict with each other. Human nature cannot be changed in so short a time. If the plan is put into practice it can only result in discord and discontent, bringing about a repetition of the Hukwang scandals, and the refusal of the Banks to furnish their quota of the loans when called upon.

To succeed in this keen cut-throat internatinonal competition, the American manufacturer must familiarize himself with China, her requirements, politics and peculiar ways of doing business. He must exert himself all along the line to obtain a fair share of this profitable business made possible by his surplus capital and the savings of the American people or, he can invest his surplus capital in building up Chinese enterprises that will, in time, compete with him in other markets of the world, a ruinous competition made possible by the unpractical ideas of an altruistic administration.

For sixteen years the Far Eastern Review has carried the brunt of the fight for the advancement of American trade interests in the Far East. Single-handed it has fought several important battles against established mercantile customs in China which tended to preclude American manufacturers and constructors from free competition in the market for railway supplies and the upbuilding of public utilities and industries in China. It has secured advantages for American manufacturers some of which they otherwise would not have obtained for many years, if at all.

This is the last fight that the Far Eastern Review can make for American engineering interests. This time, it reluctantly is forced to direct its fire against the highly altruistic policy of its own government. If the government program is carried into effect, it sounds the death knell to future American trade in China. There will be nothing left for an American publication to defend.

The issue must be faced now. It must be fought out before the bankers are compromised to a future program by signed agreements with the other Groups. The Far Eastern Review can do no more than state the facts and point a solution. There is a solution. An equitable plan can be devised that will assure to American manufacturers and constructors their legitimate benefits from the development of China's railway program, a plan that will be just to all, permitting us to assist our Allies and China.

If we are to assist our Allies and finance China for the advancement of a political policy, let us be sure that the policy will be effective. Let us be just to ourselves as well as others and safeguard within reasonable limits our commercial future, in this, the greatest potential market for American engineering supplies. This may only be accomplished by intelligent teamwork between the Administration Bankers, Engineers and Manufacturers, which, in turn, may now only be brought about by prompt action.

Write to your Congressmen. Senators, the Secret aries of Commerce and State, and, if need be, to the President himself. Let a firm demand go out to Washington from the Manufacturers of the United States that their interests be protected. DO IT NOW!

To British and Japanese Manufacturers

We invite attention to the facts disclosed in the above open letter to American Manufacturers. It is not a national argument. It holds good in your case also. The Far Eastern Review is in hearty accord with any plan to assist the British and French until such time as they can take over their share of the loans. In fact, the writer, the publisher of the Far Eastern Review, originated the idea of such co-operation during the war and submitted a plan to the Secretary of State which was subsequently adapted as the basis of the new international scheme, but modified to provide for international competition instead of equal participation in the benefits arising from construction and supply of materials.

Past experience tells us that the British manufacturer cannot compete with the Belgian on an even specification, nor will he be able to hold his own when France rebuilds her industries with the advantage of possessing the German mining regions. No nation can compete with industries established in China for this business. Japan will push ahead to secure her full share of this business and the result may be that the material benefits of this idealistic plan will go to Belgium, China and Japan.

Experience also tells those of us who have been in close touch with railway construction in China that open competition means that every car and locomotive manufacturer in Christendom will compete for the orders. It is only necessary to recall the number of tenders submitted for materials on the Tientsin-Pukow line to emphasize this statement. Experience also tells us that it is absolutely impossible to reconcile the conflicting trade interests in an international combination for the construction of Chinese railways. We have only to recall the bitter animosities aroused by the Hukwang arrangement to emphasize this statement.

The American Bankers may assist the British and French in the matter of the loan, but analysis would indicate that this is as far as the co-operation would extend. British manufacturers would receive little benefit from this application of American friendship. All British loans provide for preference to British materials, so in surrendering these agreements to the Consortium the British manufacturer would give up the substance for the shadow. It is possible, however, that the British manufacturer has experienced a change of heart on these matters, and that the campaign of the British Engineers' Association has been abandoned, and they are now willing that British capital be invested in backward countries without any provision for safeguarding their industries. The British manufacturer may believe that his future lies in establishing branch plants in China that will compete with him elsewhere in the world. In other words, the British manufacturer may have learned to become a high-minded altruist after four years listening to new world doctrines. Maybe. There have been so many changes in the past year or so that we would not be surprised to learn that the British manufacturer and British firms in China are heartily in favor of the new Consortium policy.

They may have accepted the opinion of Sir Charles Addis, the head of the British Group, who in the "International Review" for February, said:—

> "The policy of foreign industrial loans has been criticised on the ground that under the dominance of British free trade ideas the borrower is left free to purchase his material in the open market, and that, unless a stipulation is made that the proceeds of the loan shall be expended in this country there is danger of the orders going to other countries whose manufacturers would in this way be benefitted at the expense of our own. Experience, however, has shown this fear to be illusory. To demand such a stipulation is to court suspicion. If granted at all, it will be granted unwillingly or hedged about with such qualifications as to make the concession not worth the having. It is one of those cases in which, as the practical man knows, the best way to obtain what you want is *not* to ask for it. In practice trade follows the loan and orders follow the engineer. Place an engineer from the Clyde at the head of any industrial undertaking and you may safely dispense with any stipulation as to the provenance of material. Invite tenders from the wide world; frame your specifications in such a way as to suit the engineering standards of different countries; it will be of no avail. In the end you will find, no one can quite say how or why, that your railway or your bridge, or whatever the undertaking may be, is become as Scotch as the engineer himself. How all this comes about nobody knows, except perhaps, the engineer, and he won't tell. But broadly the facts are as we have stated it."

When Sir Charles wrote the article (published in full elsewhere in this number of the Far Eastern Review), he was advocating international co-operation in loans to China. But at that time, he was not informed as to the ideas of the American Government in the matter of materials. With an international board of engineers designing the specifications and the same board passing upon the tenders, it would seem that the traditional

engineer from the Clyde will find it difficult to impose Scotch ideas upon his French, American, Belgian, Japanese and Chinese colleagues with radical notions of their own about stamping nationality upon bridges and railway material.

If the French manufacturer could look ahead and defend his interests in the supply of materials, it would seem that his British confrère might profitably follow suit. However, the FAR EASTERN REVIEW has never attempted to interfere with, or give advice to, British firms in China, as they generally know how to advance and safeguard their interests without American suggestion. We have, at times, in the past, found legitimate points of difference in the policies of the United States and Great Britain and exercised our right as an independent newspaper to comment and criticize. We have, however, based our arguments on sound principles, they have never been poisoned by national antipathies or trade jealousies, and we have at all times given British enterprises proper support and the free use of our reading columns.

Some years ago the FAR EASTERN REVIEW was joined by Mr. W. H. Donald, formerly editor of the "China Mail." Mr. Donald is an Australian, a loyal Briton, and the writer was glad and proud to have him as a partner and editor. Because of Mr. Rea's absence from China, and his enforced silence by entering the Army, this has provided opportunity to competitors to circulate the story that the FAR EASTERN REVIEW has passed into British hands and is now a British organ. The report was accepted as official and published as such in the Commercial Reports of the Department of Commerce, and widely circulated by competitors amongst American manufacturers as a reason why they should extend their support to other purely American publications. It is immaterial to the publishers of the FAR EASTERN REVIEW whether it is known as an American or a British publication. We have carried the brunt of the fight in the past for a square deal to both countries, and although we may have erred at times in our criticisms of British policy, when we learned their side, we have always been ready to correct our mistakes.

In inviting the attention of the British manufacturers to the situation disclosed by the program of the new Consortium, we do so, that he may present his case before the British Government in the same way that the American manufacturer is bound to take the matter up with Washington. If Americans are to finance the British in China until the latter can take over their share of the burden and we then bind them to an agreement that will deprive them of the material benefits arising from this investment, it cannot be said we do them any great favor. In the last analysis, we have by weight of our present financial strength imposed upon the British the surrender of their trade position in China, and will have benefitted the Chinese by making possible the establishment of industries that will soon compete in other Asiatic markets with British products. If China was on an economic level with the nations of the West, this philanthropy might be justified, but to deliberately equip a nation of 400,000,000, whose labor can be purchased for twenty cents a day, seems like paving the way for our own industrial death. The FAR EASTERN REVIEW is a strong friend of China, but this friendship and sympathy cannot be stretched to advocate a plan calling for the investment of billions of dollars to place her on her feet, so she will become an industrial menace to the high-grade labor of the West.

However, this is only the personal opinion of an American journalist which may not meet with the ideas of the British Chambers of Commerce, any more than some of the philanthropic American organizations. It is, however, a fair issue, and we place it before you as our contribution to a square deal and a better understanding between the two nations.

Suppose this plan goes through, and suppose that Chinese and Belgian plants fail to obtain the bulk of these orders, who will benefit? There is only one answer; Japan. Japanese capitalists will find no difficulty in obtaining funds for the establishment of great railway material plants, and as long as her products come up to the standard specification, her firms must be awarded the business. So the outcome of the plan will be to divert this business, if not to China, then, Japan.

This in turn opens again the discussion of American or British co-operation with Japan, or with China, as the only means of obtaining the material benefits from the present American policy. This, however, is another story, but it must be faced.

Progress of Likin Abolition Negotiations

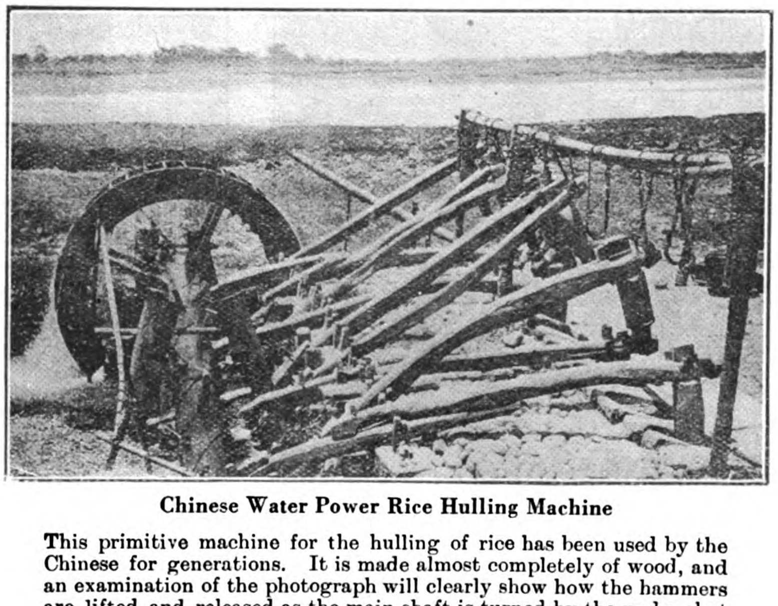
Since the Anglo-Chinese "Mackay Treaty" of 1902 the question of abolition of *likin* stations has always been on the table of diplomatic agenda between China and the Powers. According to the above important convention China will abolish these internal taxes so soon as the other treaty powers will likewise act upon the engagements of Great Britain. In return for such abolition the British Government consents "to allow a surtax, in excess of the tariff rates for the time being in force, to be imposed on foreign goods imported by British subjects, and a surtax, in addition to the export duty, on Chinese produce destined for export abroad or coastwise." That is to say, the promised surtax will be assessed at 7½ per cent. *ad valorem*, and foreign goods will then be dutiable on a 12½ per cent. basis.

Up to date, no such unanimous agreement on the part of the treaty powers has yet been reached and the promised increase of a mere seven and a-half per cent. has not proved attractive enough for the Chinese Government. In consequence, however, of the resolutions of the British Chambers of Commerce held last November in Shanghai, fresh negotiations are now in progress between the British Legation and the Peking Government on this subject.

The Chinese themselves realize the irksome burdens of the *likin* system and the Chinese merchants are only too glad to avail themselves of the foreign traders' privilege of protecting their goods from the octopus-liks tentacles of this incubus by the transit tax system. If a tooth-brush costs only five cents in Canton, it will cost thirty cents in Kalgan, just because of the numerous vexatious and indefinite impositions *en route* under the trade-throttling system. So the problem is how to compensate adequately the Central and Provincial governments when the system is abolished.

For example, the import tariff after revision in 1918, is still short of the treaty-stipulated five per cent. effective duties. Even with the promised surtax of 7½ per cent. in actual enforcement after the abolition of *likin* it is calculated that the deficit which must be made good will be over six million dollars. Hence it is reported that with regard to the resumption by China of commercial relations with Germany and Austria the idea is to revert to the old national customs tariff for non-treaty powers—namely, taxes of ten per cent. on ordinary goods and twenty per cent. on luxuries.

On the one hand the foreign traders desire a veritable guarantee that with the abolition of *likin* no new allied taxes will be foisted on them. On the other hand, the Chinese Government will take no final action until the country is once more united under one central authority. Meanwhile a financial conference is planned to be held in Peking in March, attended by delegates from all the provinces when the proposals can be thoroughly discussed.



Chinese Water Power Rice Hulling Machine

This primitive machine for the hulling of rice has been used by the Chinese for generations. It is made almost completely of wood, and an examination of the photograph will clearly show how the hammers are lifted and released as the main shaft is turned by the under-shot water wheel. The grain is placed in motars carved from solid pieces of granite.

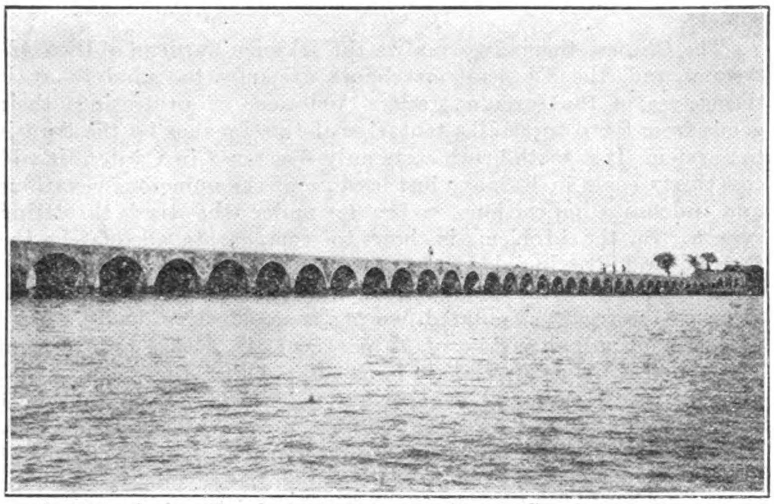
Chinese Bridges

By R. W. Davis

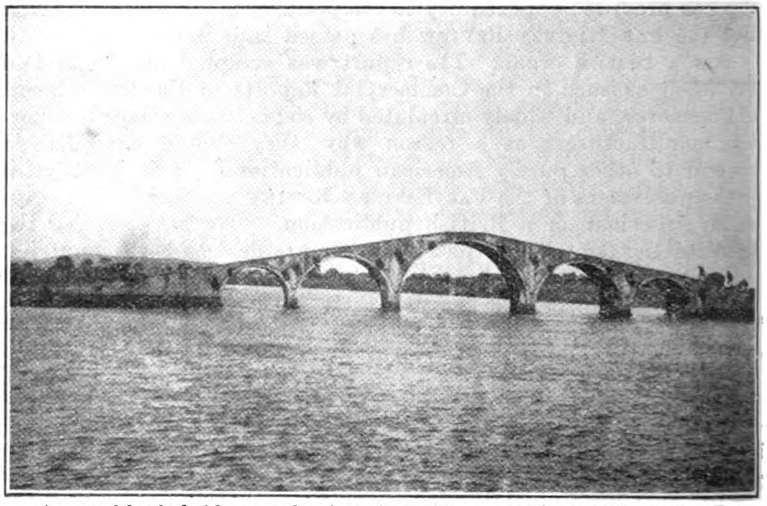
GETTING to the other side was one of the first problems that confronted primitive man. It has remained a problem ever since and has been solved in numberless ways by different countries. Where the span has been short the bridge is the ideal link, and in no country are there more varieties of it than in China.

The accompanying photographs depict bridges in the far West and the near East of China. They all depend on local material and labor for their construction and indicate in a general way the character of their builders and users. In the wild west, primitive affairs of woven bamboo span otherwise impassable gorges and rivers, while in the more civilized parts of the Empire bridges may be seen of great artistic beauty and no mean architectural merit, such as the marble bridges for which Peking is famous. The ingenious method of digging a loop in the canal or stream where a bridge is needed, filling in the real bed and building the bridge on dry land, and then digging away the original bed to fill up the borrowed one may often be seen in practice. This method explains to some extent the manner in which huge blocks of stone are fitted into place.

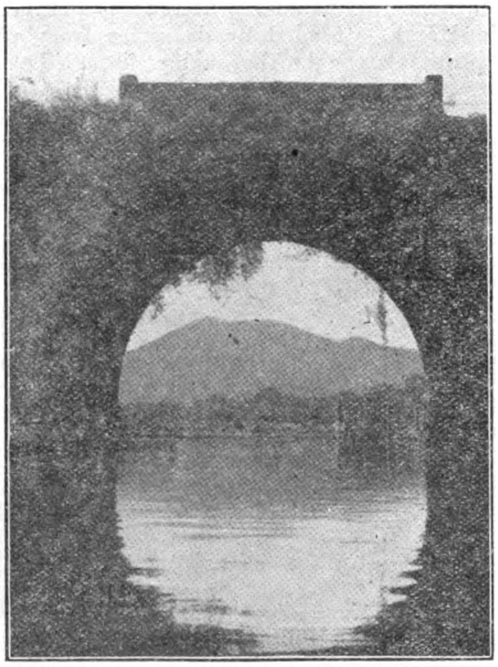
[We are indebted to Mr. R. W. Davis for most of the photographs; other of the photographs have been reproduced, with permission, from "The East of Asia" magazine.—Ed. F.E.R.]



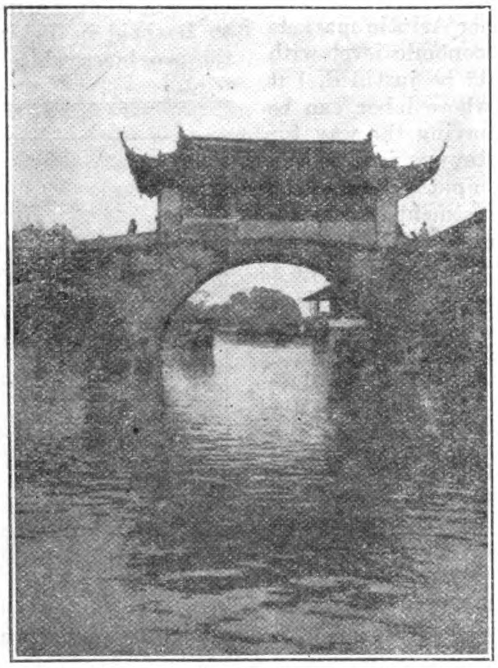
A part of the 53-arch bridge on the Grand Canal near Soochow. The photograph shows about half of it. On the main road between Shanghai and Soochow, which was once almost a crowded thoroughfare. It has largely lost its glory now that the railway runs almost parallel with it; trackers are its principal patrons to-day.



A camel-back bridge at the junction of two canals in Kiangsu. Its pleasing lines blend well with the flat lands of the Yangtze Estuary and, like all bridges in China of native construction, the building materials are those nearest at hand—a granite outcrop in a nearby quarry.

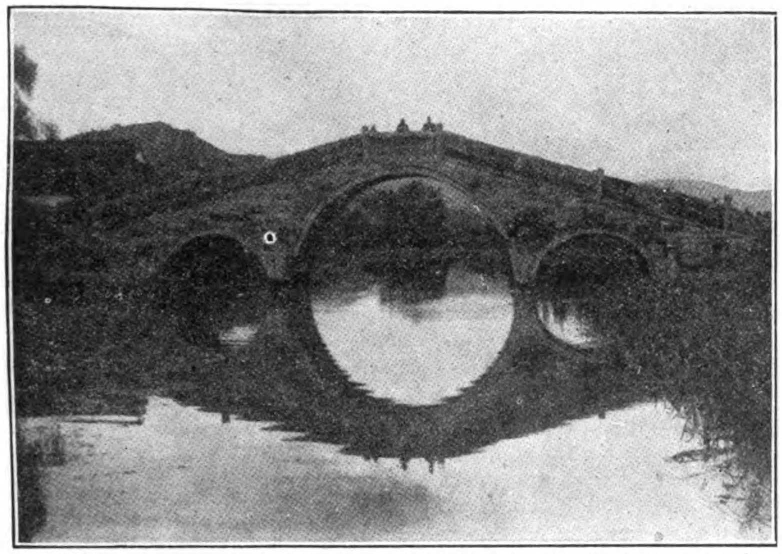


An old stone bridge on the causeway over the West Lake, Hangchow. Pilgrimages are made from distant parts of the Empire to enjoy the beauties of West Lake.

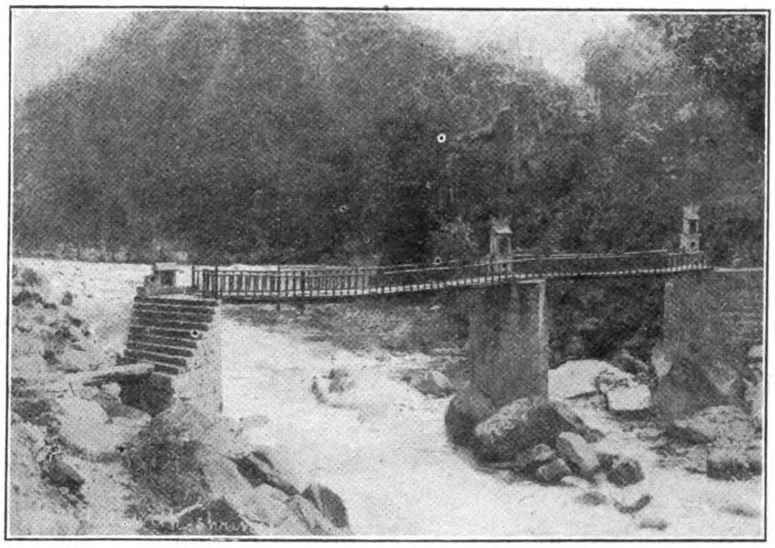


The House on the Bridge. A well-known landmark, or canalmark, between Soochow and the Tai Hu. This canal is rapidly shallowing and is blocked to deep draft traffic when the water is low.

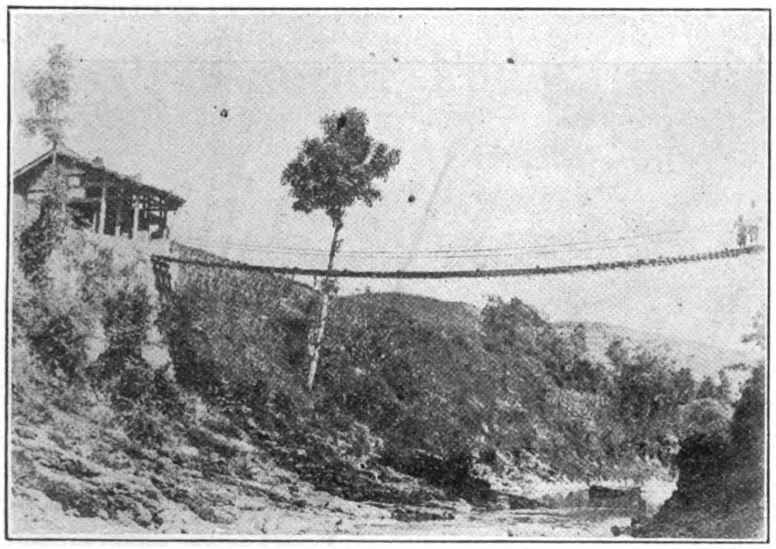
Toll bridges are quite common in China. A toll gate is shown in the photograph which is guarded by day by the toll-keeper and locked for the village's protection at night.



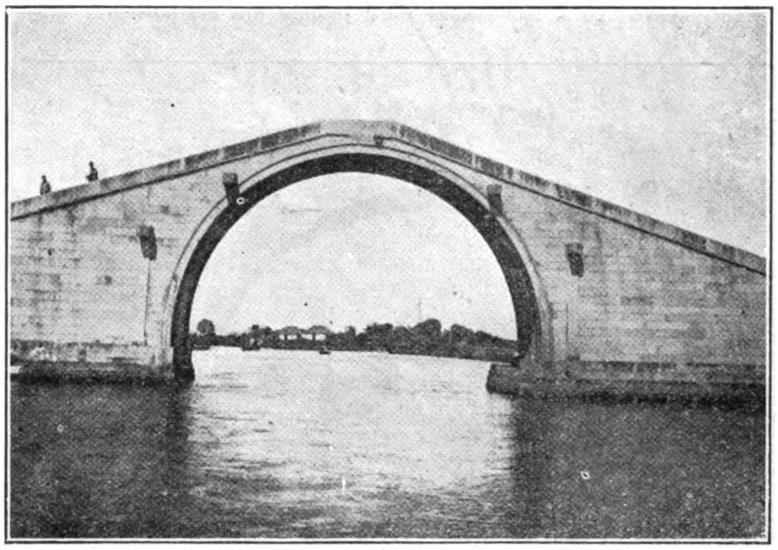
A well-built granite bridge near the Tai Hu. It is distinguished by a high stone parapet, an unusual feature, and bears an inscription lauding the builder.



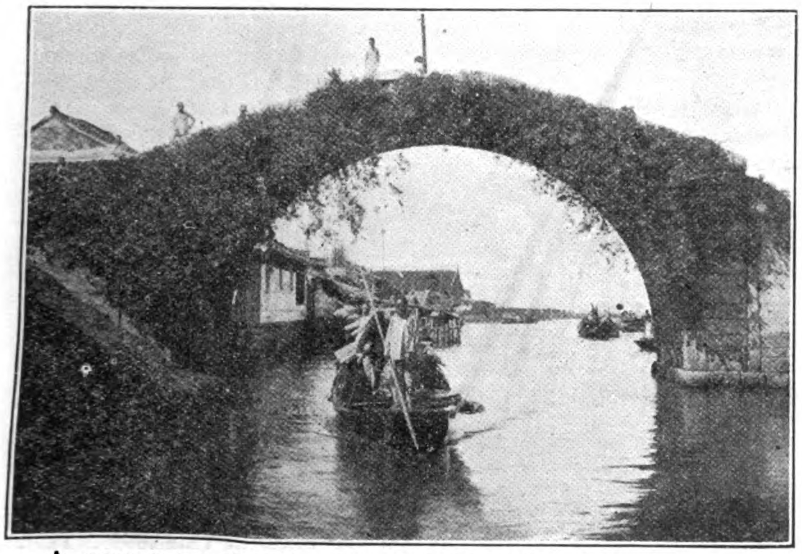
A Western China bridge over a mountain torrent. It is built on stone piers to which heavy chains are bolted to carry the road bed. A little shrine on each pier appeals to the wayfarer.



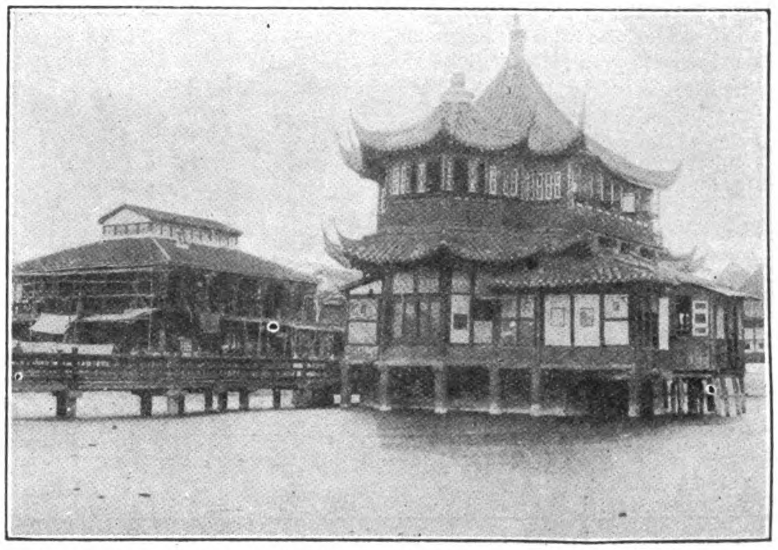
Near the Burmese border may be seen bridges of heavy wrought-iron chains, at the ends of which are uncouth-looking windlasses to keep them taut. The illustration is of a toll bridge in this region. In the windy mountain gorges of the West, crossing a swaying bridge a hundred or more feet high is no mean feat.



A camel-back stone bridge on the Grand Canal between Soochow and Hangchow. The smaller junks can negociate it without lowering their masts. Like most bridges on the Grand Canal it is provided with a ledge (seen on the right near the water's edge) on which the trackers who tow the boats can walk.

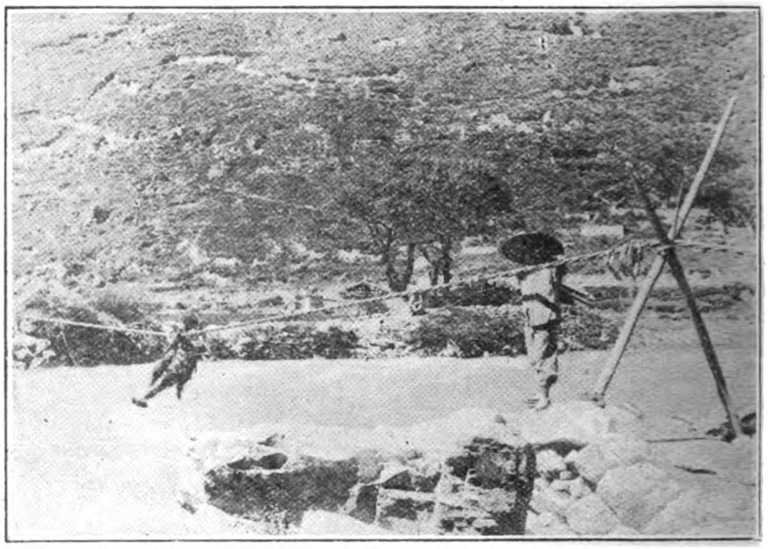


A creeper-covered bridge near Hangchow. It is built of a granite "shell" which is filled in with a primitive concrete. Seeds find root in this and soon the work of disintegration begins. A bridge's days are generally numbered when the first stray seed takes root.

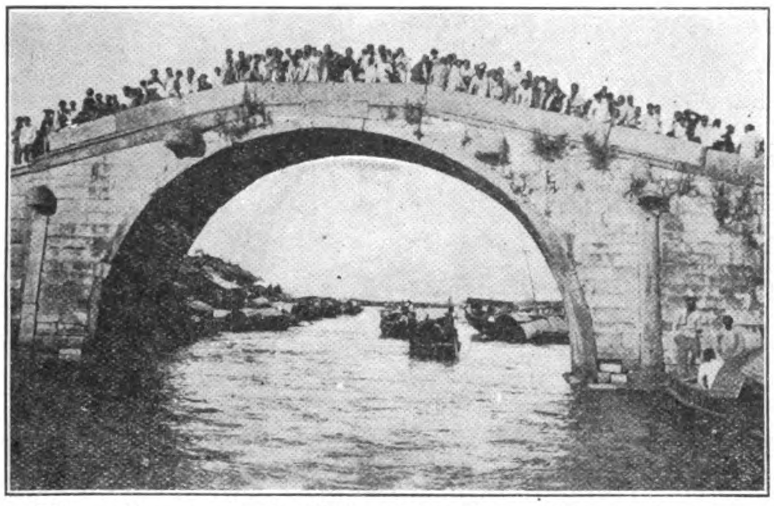


Ornamental bridge construction. The famous bridge depicted on willow-pattern porcelain giving access to the tea house on the lake in the native city of Shanghai. A crooked wooden structure whose glory has long since departed.

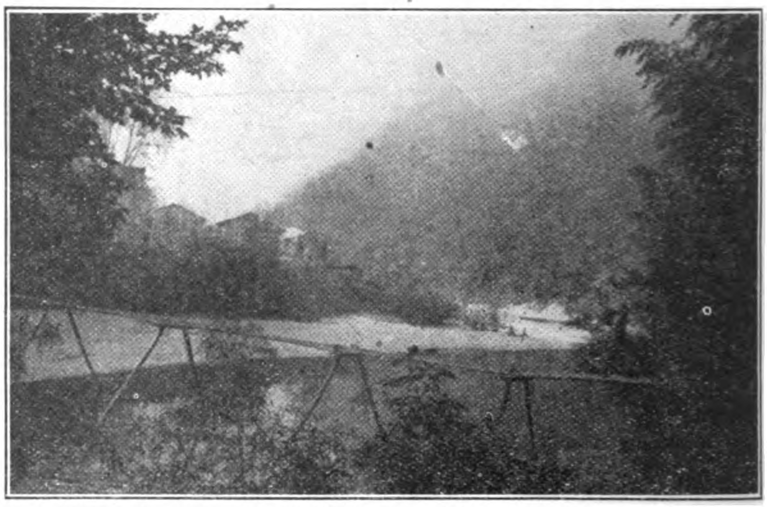
A slab stone bridge connecting a temple island in Chekiang with the mainland. An extremely ancient type of bridge built of single stone slabs laid side by side, with a similarly built parapet. It is often a matter of speculation how, without modern mechanical methods, the Chinese cut such huge slabs, weighing often many tons, transported them across country and placed them in position. Given good foundations these bridges are everlasting.



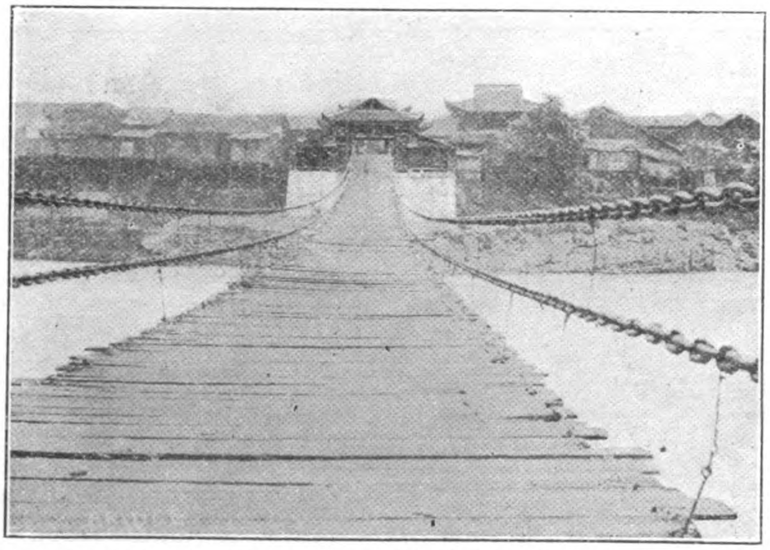
A giddy crossing on a cable swing bridge. The ravine is spanned by an almost everlasting bamboo cable on which runs a swing in which the traveller may sit. This can be pulled from side to side by a rope, but the first man of the party over must pull himself along hand over hand. It is a test of muscle, nerve and endurance. Might is often right in these mountain fastnesses, so a bridge that can be demolished speedily has its good points.



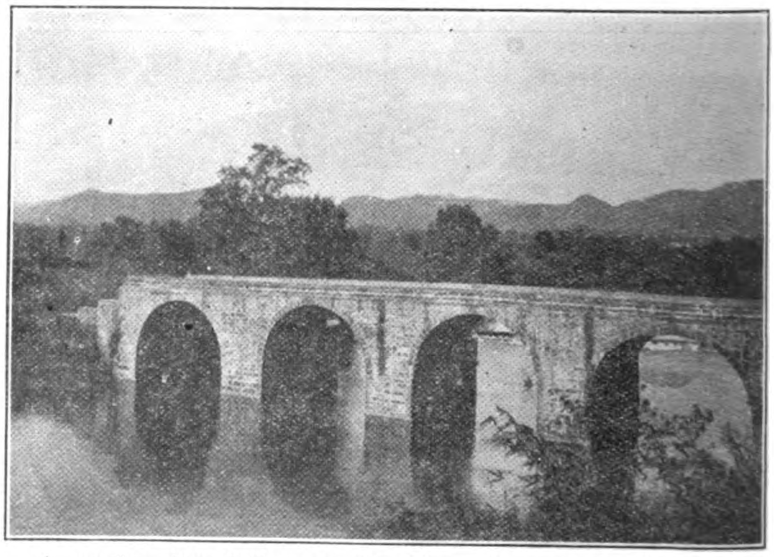
The parish pump in the West and the village bridge in the East are near relations. The population has turned out to see a novel spectacle up-country—a fast motorboat. The village bridge is generally crowded and is often an improvised market, accommodating peddlers, refreshment hawkers and fortune tellers.



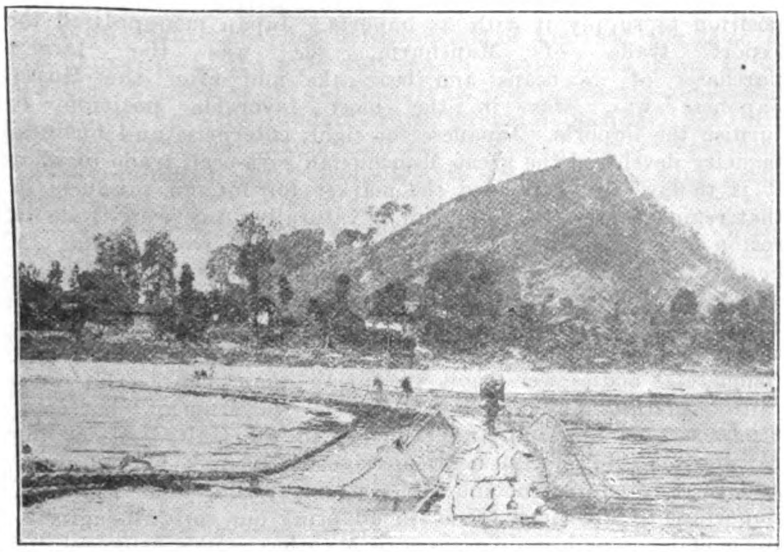
A mountain stream from the Huang Shan, Anhui, spanned by a village-built bridge of fir. It would require a very massive bridge to withstand the spates that rush down from the mountains in the rainy season, so a bridge that may be carried away without great loss is constructed. The roadbed is anchored to the banks.



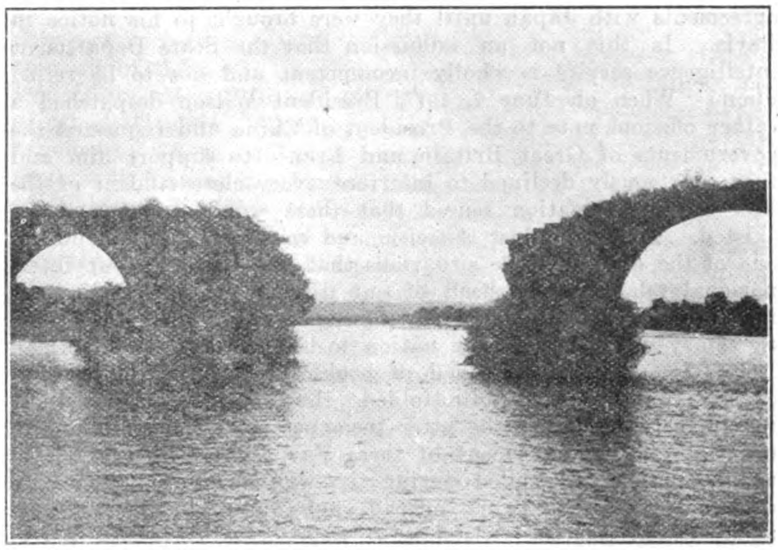
A suspension bridge on the road to Tibet. A fine example of primitive bridge-building, all the materials and workmanship being of local production. Toll is levied of the traveller for construction and upkeep, a fee gladly paid to avoid the dangers of ferrying the turbulent stream below.



A massive stone bridge over the Singan River in Chekiang. It is forty feet in width, yet is approached on either side by a native path on which two people cannot walk abreast. There is a story that it was built by a lover to make good the road to his mistress's house on the other side of the swift-flowing Singan.



A bamboo bridge over the Ya in Western China. The floats are made of thick bamboo, and the hawsers by which it is moored are woven of long splints of bamboo plaited into a rope several inches in diameter.



Decadent China. A granite bridge over the Chientang about 400 feet long, one of the arches of which has fallen in. In these democratic days the repair of public property is nobody's business, so where it falls it can lie. When freshets come down the water is almost up to the top of the arch.

Shall America Fight for China or Co-operate with Japan?

By Geo. Bronson Rea, M.E., Publisher of "The Far Eastern Review"

WILL the United States go to war to help China? Influences are actively at work to this end. Mr. T. F. Millard, who appeared before the Senate Committee on Foreign Relations as an adviser to the Chinese Government, testified that when the Kiaochow decision was announced in Paris, the unanimous opinion of the Far Eastern experts was that it meant war with Japan. In a subsequent magazine article he placed these words in the mouth of Mr. E. T. Williams, the chief American expert, which made them official. Mr. Williams has since reiterated this opinion in an address on "Shall America Stand for the Shantung Deal," delivered at a recent church meeting in San Francisco.

Mr. Williams said that "American soldiers had died in vain at Chateau Thierry and Belleau Wood, and as the result of propaganda America would be fighting Japan within ten years." He added that "President Wilson was helpless when confronted at the Peace Conference by the secret agreements between Japan, France, Great Britain, and Italy, concerning the disposition of the German rights in Shantung and the Pacific Islands." Mr. Williams has been the trusted Chinese expert of our government and for many years previous to his resignation was head of the Far Eastern Division of the State Department. Because of his intimate inside knowledge of the Administration policies and the events of the past five years in the Orient, he was called to Paris to act as the chief Far Eastern expert to the Peace Delegation.

During the time that Mr. Williams officiated over the Far Eastern Division, the Administration was called upon to face several delicate issues in China, first, in the matter of the Japanese Demands of 1915, then on the announcement of the new Russo-Chinese alliance of July 1916, followed by the additional Demands of Japan upon China arising out of the Chenchiatun incident, and the more serious situation created by the protests of Japan, Russia and Great Britain in October of the same year, and of France in April, 1917, against the activities of an American company in raising the issue of the Open Door at a time when they were fighting for their existence with Germany. It is on record that as each incident arose, the Administration refused to take action. Under no circumstances, no matter what might happen in the Orient, would our government take independent action, and fully justified its attitude by public statements to the effect that these issues were not the sole concern of the United States, that all the treaty Powers were equally and vitally interested, and, therefore, having in view the unsettled condition of world affairs, the government of the United States could not take upon itself the task of facing these issues alone. The Administration told the country that it had decided upon the definite policy of postponing all consideration of Far Eastern issues until the expiration of the war, and then, either at the Peace Conference, or a special international convention to be called for that purpose, to have the status of China decided for all time. It was a typical example of the present Administration's methods of pussyfooting and sidestepping these matters which the general public accepted as sound and statesmanlike.

The press and public have forgotten, and as events proved, the promises to the nation were made to tide over a critical situation, for when the time arrived to make good they were ignored. The President's Far Eastern advisers, Sinophiles all, concentrated their fire upon Japan. When the President lost his case they deserted him, resigned, and hurried home to throw the onus of the defeat on to Colonel House and the President, and break the treaty in the Senate. Had our Delegation been more intent upon preserving American interests, the other Powers would have been informed at the outset of the negotiations that the Shantung question being only an insignificant part of the general Chinese problem, it could not be considered apart. Therefore the German rights in Shantung should be surrendered to the Allies in the Treaty, leaving Japan as Trustee, until such time as a special conference could take up the whole problem and definitely decide the status of China. The Allies and Japan would have had to accept, China would have been pleased, and the President would have lived up to the traditional policy of the nation, complied with his oft-repeated promises, and avoided the unseemly squabble in the Senate, and the widening of the breach between this country and Japan. The American Delegation chose the other road. A government converts its sacred promises to another nation into "scraps of paper" and the world plunges into a just war to chastise the breaker of treaties; an Administration sidesteps out of a difficult situation by solemnly promising the nation that it will settle the issue diplomatically when the proper time arrives, and then deliberately breaks its word and paves the way for hostilities. What is the difference between the two conceptions of the pledged word?

The Secretary of State testified before the Senate Committee on Foreign Relations that he was in total ignorance of the secret

agreements with Japan until they were brought to his notice in Paris. Is this not an admission that the State Department intelligence service is wholly incompetent and not to be relied upon? When on June 2, 1917, President Wilson despatched a rather officious note to the President of China and requested the governments of Great Britain and France to support him and they courteously declined to interfere, every close student of the Far Eastern situation sensed that these secret understandings existed. To escape just criticism and censure for manhandling one of the most delicate situations that has arisen in our international relations, the head of our diplomatic service discloses its incompetency in other directions. In plain words, the Secretary of State asks the nation to believe that the American Delegation with its shipload of books, documents, data, and experts, went to Paris blindfolded, thus furnishing the most conclusive evidence of the utter incompetency of the mission to negotiate a just settlement of these Far Eastern issues. With all the millions expended during the war on propaganda and diplomatic gum-shoe work abroad, not one diplomat or secret agent discovered the existence of these so-called secret agreements. The Allies were lined up against us, and we didn't know it. It seems incredible, yet we have the testimony of the Secretary of State that it is so. The situation was exactly like that precipitated in 1916 by the American railway contract with the Chinese Government, which simultaneously raised the issue of the Open Door with the Four Allies, and, on the public confession of the State Department was concealed from its knowledge for over four months by the American Minister at Peking, or, until the issue had been definitely created. One wonders what the American diplomats and their agents in London, Paris, Rome, Tokyo and Peking were doing all this time and how they expended the millions appropriated and placed at their disposal for acquiring exact information.

So, if Professor Williams' prophecy comes true, and propaganda will lead us into war with Japan within ten years, the pertinent question arises: What propaganda, whose propaganda? Will it be of the German type so roundly denounced by Roosevelt before he died, and referred to in the public announcement of the Lansing-Ishii agreement? Obviously, Japan will hardly carry on a propaganda to bring about hostilities with this country. We cannot accuse Mr. Williams and others of being under German influence, so it can only be such propaganda as is now being carried on by China, her friends and agents, who insist that the United States has gone too far to back out with dignity, and if for no other reason, we must now fight to preserve our trade and opportunity for the profitable investment of our surplus capital in China. Professor Williams corroborates and emphasizes a truth that I have been trying to drive home to the minds of American business men, that this constant agitation in America against Japan can only lead to disaster. And I say with all sincerity, that such a contingency will be traceable largely to the situation created by the Shantung deal in Paris, which should never have been permitted to occur.

Coincident with Mr. Millard's testimony before the Senate Committee, merchants and commercial bodies in this country interested in Chinese trade received circular letters from Mr. J. B. Powell, the associate of Mr. Millard in China, and Secretary of the American Chamber of Commerce of Shanghai, requesting them to call upon their Congressmen and Senators to demand from the State Department the secret and confidential reports about Japanese activities and intrigues in China. Since then, considerable publicity has been given in the American press approving the Chinese boycott against Japanese goods, all emanating from Americans in China. The American Chamber of Commerce in Tientsin has now added the weight of its influence to this campaign, and in letters to affiliated commercial bodies in this country, states: "China alone, without the promise of armed support, will not be able to obtain the setting aside of her concessions to Japan of 1915 and 1918," and then goes on to cite conditions in Manchuria as an example of what may be expected in Shantung.

These arguments overlook that Japan's dominant commercial position in Manchuria is the result of the operation of a fundamental economic law. The nation who purchases the major part of the exports of another country is in the most favorable position to supply it with its imports. Japan monopolized the export trade of Manchuria, she was the largest purchaser of its beans and bean-cake and after the Russo-Japanese war, was in the most favorable position to furnish the imports. Japanese foresight, enterprise and business sagacity developed the great Manchurian soya-bean trade to what it is to-day, and expanded the market for foreign products in that region for the benefit of all. Naturally, American trade in cotton goods was displaced by cheaper grades from Japan. A howl of protest arose from the American and British merchants and appeals were made to their governments for protection against Japanese discriminatory and preferential practices. On the other hand, at the time American piece-goods merchants and commercial bodies were most violent in their charges of bad-faith against Japan, the Japanese Government borrowed $60,000,000 in England and spent it in the United States for railway materials. American piece-goods suffered, but our steel and railway equipment industries profited, and, what was more important to American trade, in adopting our railway engineering standards and specifications in Manchuria, the Japanese did for us what we have never been able to do in China ourselves.

The piece-goods and other trades can never hope to appreciate nor understand the fierce antagonism of European nations to the establishment of American engineering standards in China, and how the American manufacturer was discriminated against in designing standards, specifications and the awarding of tenders. We were frozen out on all sides by the combination that monopolized railway construction in China. The peoples of the Orient now ride over the rails of the South Manchuria railway in American Pullman cars that in luxury, comfort, and exquisite cleanliness are not excelled by any of our more famous limited trains. American locomotives, cars, bridges, rails, signals, machine shops, hotels, and all that go to complete American railway and engineering practice are there, an object lesson to the rest of Asia, the one lone American line on the whole continent. Not a little jerkwater local line typical of the West, but an up-to-date, high grade, American railway, the last word in engineering efficiency. This great advertisement, our manufacturing interests, owe entirely to Japanese friendship and desire to co-operate with us.

And so it will be in Shantung and elsewhere. American piece-goods, muck and truck, and minor products, will suffer in competition with Japan. The Japanese may even employ artifices and discriminatory practices to insure that this trade goes to their manufacturers, but will not the loss in these lines be balanced by Japanese orders placed in America for the more important engineering materials? Can we hope to have it all? Japan must live. It is unfair for Americans to cry when they are hit in lines which the Japanese excel in. Must we have all the profits from the cotton goods trade? Japan purchases her raw product abroad, and, like England, makes a profit and sustains life out of her labor. Americans cannot expect to sell Japan the raw material, mill machinery, dyes, etc., and then hope to undersell her in China in the finished product. We cannot have it all our own way. Some lines of trade must suffer.

Americans who clamor for war with Japan when their particular line of trade is cut into by Japanese competition, should study the trade returns. They will then see that the interests of the majority must be considered. Let us take this one question of cotton goods, and we find that forty per cent. of our total trade with Japan during the past year was in raw cotton valued at $131,160,386, or $14,000,000 more than the total exports to China. Japan bought from us $6,281,524 of machinery, $25,048,733 in steel plates, $3,582,056 in structural steel, $5,871,000 in tin plates and $3,704,000 in various kinds of wire.

We are selling to Japan the bulk of her raw cotton, the mill machinery and engineering supplies to work it into the finished product. Japan contributes the labor of her millions who must be housed and fed, whose toil enables her to purchase other essential products. Suppose we manufacture the cotton goods at home? The increased profits to the cotton milling industry would be at once offset by the decline in the steel and machinery business. It also means that in order to compete with other countries our cotton mills must employ the cheapest kind of cheap labor. In the United States this means women and children,

which in turn, makes for deterioration of the race, the same as has happened in the mill districts in England, the same as we are now witnessing in Japan. Is it not better for Americans to furnish the raw product which provides open-air, healthful employment to our blacks, and the mill and other machinery whose manufacture gives remunerative employment to high grade artisans?

The trade statistics are therefore the best guide. When Americans lift up their voices in protest against Japanese methods it would be well to remember these facts. The very manufacturers and commercial bodies appealed to in the United States to join these protests against Japan, are conducting a larger and more profitable business in other lines with the latter country. On the other hand, as China gradually enters upon her modern industrial life, will she not also close the doors to American and other foreign trade by the very cheapness of her products? As Japanese industries expand, she must always remain our good customer in steel, steel products, railway, mill equipment, and general engineering supplies. Under no possible condition can she hope to actively compete with us in these lines. In the first place she lacks the coal, iron and other requisites, and again she can never hope to match our quantity production. Can the same be said of China with her immense deposits of minerals whose development under foreign technical guidance will enable her to gradually force our products from the Orient and compete with us in other spheres, and ultimately in our home markets? Will not European capital, in order to escape the heavy taxation at home, seek to develop these Chinese industries and so gradually hit at us through the employment of this combination of unlimited cheap material and cheaper labor? American sympathy goes out to China because of her political troubles, and the Chinese reciprocate our disinterestedness. But friendship ends right there. China is one of the greatest potential markets for American products; she is also the greatest potential enemy to our industrial life. With the influx of European or American capital for the development of Chinese industries, the day will come when we will not only lose our cotton and general trade but will be seriously crippled in the more important steel and engineering lines.

The question arises: Is it best for us to co-operate with Japan or China in these matters? If with Japan, we are reasonably assured of preserving our predominant position in the engineering field, and must face the loss of minor business. If with China, it means the gradual loss of both. It is easy to argue on both sides of this question according to individual interests, but the above basic facts will always remain. We cannot have it all our way. Japan has to live and can do so only by becoming an industrial nation, importing her raw products and selling the finished article, the same as England. Unlike the latter she has no vast coal and iron deposits, so cannot compete with us in this the engineering market. These she will buy from us, if we treat her fairly, and don't cry for the whole pie, crust and all.

The Japanese have asked Americans to co-operate with them along certain lines in China, and, on analysis, this must be in engineering and development matters, in which they recognize our superior skill. They gave us a sample of their trend of mind in the equipment of the South Manchuria Railway and the development of the great Fushun mines and other industries. They antagonized their British allies by spending with us the loans raised in England, and provided us with the best advertisement of our engineering practice that can be found outside the United States. Understanding this, we can appreciate the attitude of Judge Gary and other American financiers and captains of industry when they come out openly for this idea of co-operation. Have the Chinese evidenced a sincere inclination to co-operate with us in the development of railways which American money is expected to build? We hear of Great Anglo-Chinese and other European schemes to manufacture steel and railway equipment in China, but there is no evidence or indication at this time, that any American firms have been invited to share in this semi-official business that our money will make profitable.

Yet, we have before us, what to all appearances, seems to be a concerted program on the part of ex-American diplomats, chambers of commerce, and other representative people, to plunge this nation into war with Japan, and there is ample evidence that all of these war promoters are closely allied under one leadership. Mr. Williams, Mr. Millard, Mr. Powell, Mr. Evans, of the Tientsin Chamber and others, all present the argument from different angles, but the burden of their song is that the United States must go to war in behalf of China. Minister Reinsch resigned in a huff because the President was not guided by his counsel, and Secretary Lansing recently intimated his desire to resign from the Cabinet, the split between him and the President going back to the latter's refusal to follow his advice on the Shantung matter in Paris.

And what is it all about? Simply this. A group of pro-Chinese administration officials went to Paris with the set idea of discrediting Japan and making her relinquish the concessions extracted from China in 1915 and 1918. They went to the great conference that was to remake the map of the world, blindfolded, groping in the dark like lost children, as is fully revealed by the testimony of the Secretary of State. They wilfully overturned their own policy and broke the promises so glibly given to the nation when they were pussyfooting themselves out of difficulties. They led the President into a blind alley and left him there. To save their reputations and "face" with China, they resigned, abandoned the President, and are now clamoring for war with Japan as the only solution to a problem they were hopelessly incompetent to handle diplomatically.

With one breath they talk war with Japan, and in the next, appeal to the American people to lend funds to China. We have before us the illuminating spectacle of an Administration trying to organize an international consortium to accomplish through finance what they could not carry out diplomatically, and compromising the American bankers to advance over a billion dollars to China, while the chief Far Eastern adviser to that Administration is telling us on the speaker's platform, that through Chinese propaganda we will have to fight Japan within ten years.

The Chinese want American money and have sent our ex-minister to Peking as envoy-extraordinary to help raise the loans. On the other hand, they are encouraging a propaganda designed to pit the nation against Japan. It is a remarkable illustration of the inside working of the Chinese official mind, hoping that the American people will never wake up to the double game being played. If we are to invest over a billion dollars in China through the Consortium or otherwise, and then be called upon to go to war with Japan to assist our Chinese friends, the investment will turn out to be the most costly one we have ever taken up. If the original investmnet to place China on her feet is to pave the way for the expenditure of many more billions in waging war, it would seem that our best play is to copper the bet, and take out an insurance against war, by co-operating with Japan.

A few years of honest government in China and she will require no foreign loans, and, if she discards the science of warfare invented by Field-Marshal Wang Sun-ki in B.C. 2000, her four hundred million people will be quite able to protect themselves against Japan or any other nation without the armed assistance of the United States.

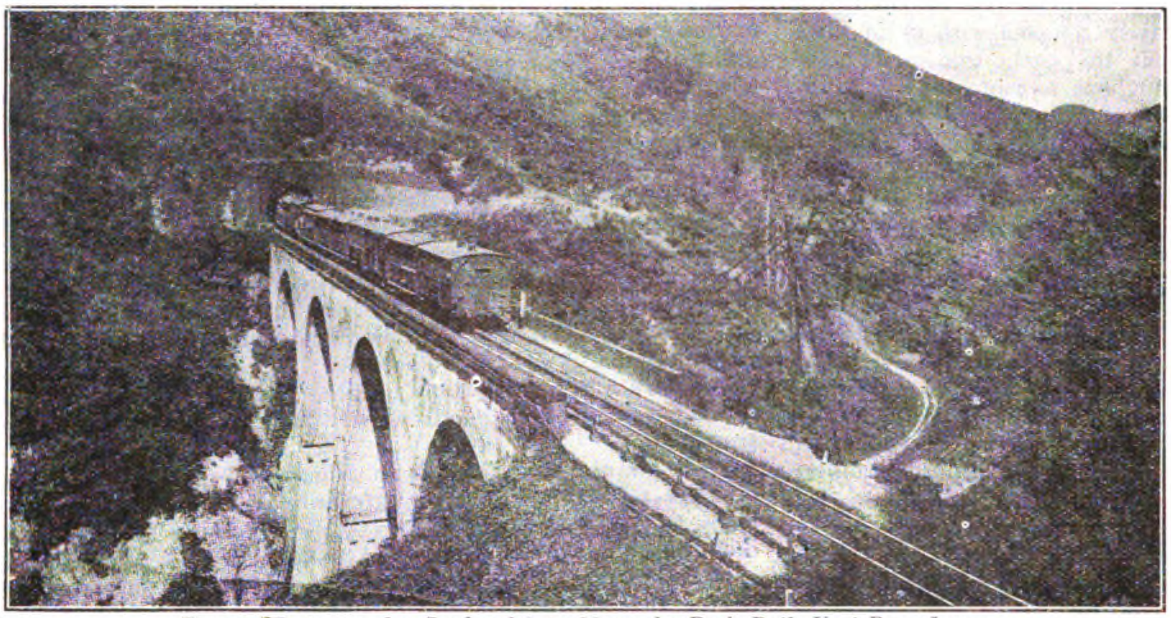
EDITORIAL NOTICE

The complete reversal of the policy of the FAR EASTERN REVIEW effected by its Publisher, Mr. Geo. Bronson Rea, in the course of recent months compelled its Editor—the undersigned (in the February issue)—to disclaim responsibility for views expressed by writers of signed articles. The receipt of further similar articles which the undersigned cannot endorse causes him to withdraw from his position as Editor of the FAR EASTERN REVIEW.

W. H. DONALD.

Electrification of the Abt Rack Rail Section Across the Usui Pass, Shin-Etsu Line, Japan

THE Usui Pass is located on the Shin-Etsu Line, and forms one of the steepest mountain paths in Japan, the highest point reaching 3,086-ft. above the sea-level. The mountainous configuration of the region rendered it impossible from the outset to locate an easier alignment than the existing one, where the difference in level amounts to 1,817-ft. in a length of about 6.9 miles between Yokogawa and Karuizawa. The engineers in charge were, therefore, obliged to drive no less than 26 tunnels measuring, in aggregate length, 2.8 miles.



Electric Train up the Grade of 1 in 15 on the Rack Rail, Usui Pass, Japan

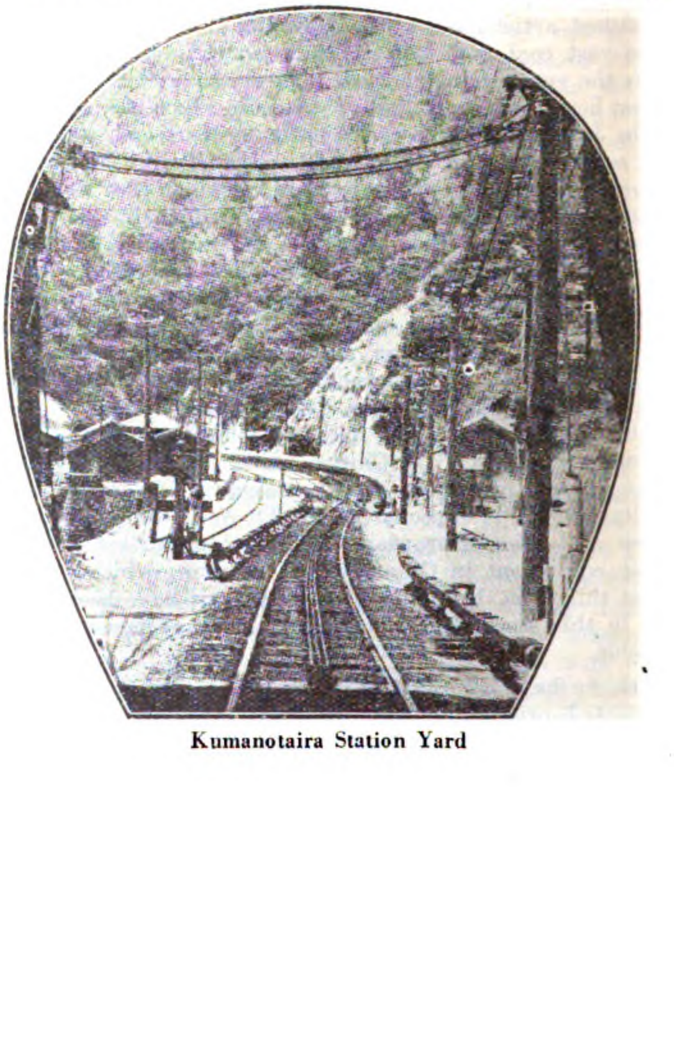
To overcome this enormous difference in level, the original line was constructed on the rack rail system on a steep grade of 1 in 15 or 6.7 per cent., for a matter of 5.2 miles, of the single track. The length of trains is limited by the length of the single turnout at Kumanotaira, at the centre of the line, where there is only 410-ft. between the two rocky ridges. Originally the trains consisted of one rack steam locomotive with five to six passenger and freight cars. Later, a double train consisting of two locomotives and ten to twelve cars was adopted. The steam trains were formerly designed for a speed of only 5 miles per hour, taking one hour and a quarter in crossing the pass. The journey was, for the greater part of the way, a most abominable experience, on account of the deafening roar of the engines combined with the hissing of steam pipes, and above all the suffocating vapour and smoke which found their way into the cars, as the train passed through the series of tunnels. The ordeal was particularly acute for the engine-drivers and stokers, owing to the inadequate supply of fresh air, and more than once they were found prostrate, choked practically to death or spitting blood.

The elimination of this nuisance had long been the subject of careful investigations by the authorities. Meantime the growth of traffic over the line was such, that a regular train schedule of 36 trips per day was found inadequate to cope with the situation. It was impossible, however, to increase the capacity of the line by additional train service, as this had already reached the limit of steam operation.

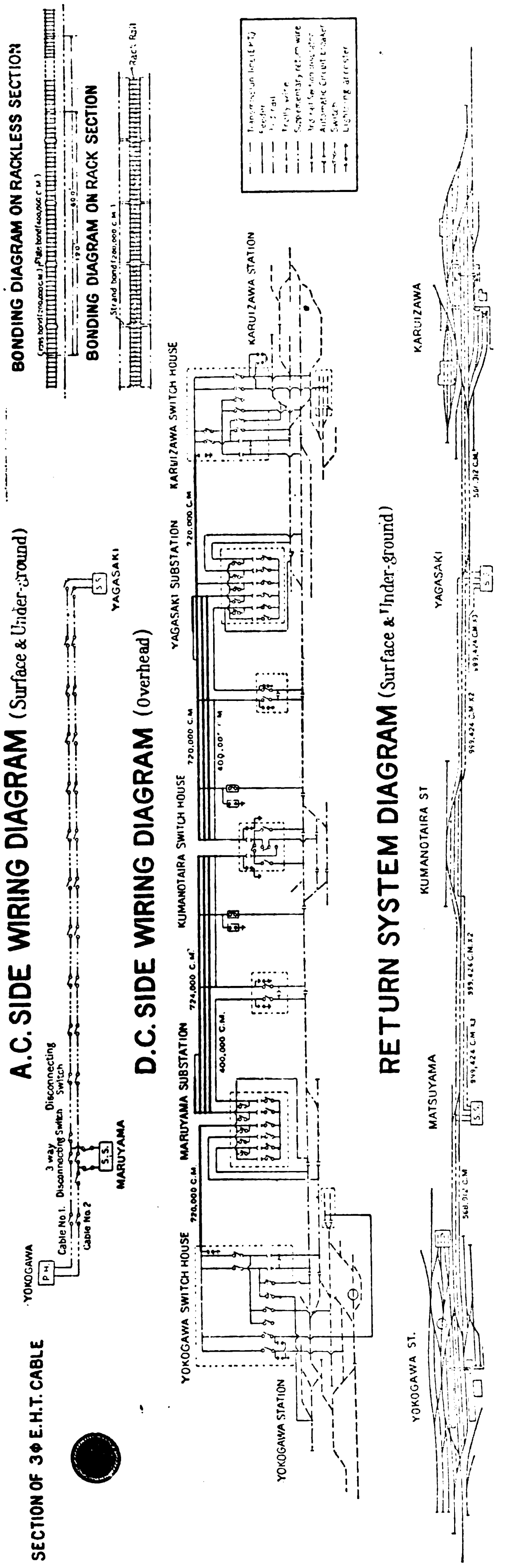
The authorities came to the conclusion that the only effective remedy lay in the change of motive power, and accordingly the electrification of the line was projected in 1909. In April, 1910, a substantial start was made upon the work, which was, however, seriously delayed by the occurrence of a flood of rare magnitude, and it was not until May, 1912, that the electrified line was opened for public service after five months of trial running. Thus was accomplished the hardest work of electrification, wherebyy a couple of rack locomotives are worked to pull 14 cars up a steep grade of 6.7 per cent. for a length of 5.2 miles of the rack rail system—an engineering feat, which, at that time, was unexampled even in Europe and America. As was anticipated, the electrification has considerably increased the traffic, while the time taken in travelling from Yokogawa to Karuizawa has been reduced from 1h. 10m. to 43 minutes.

Track Construction

Before stating the main features of the electrification, it would not be amiss to give a brief description of the rail construction of the electrified section. The running rails in use consist of the adhesion rail and the rack rail, which can gear with the driving pinion of the locomotive. The adhesion rail adopted is the T-rail, 60-lb. per yard, which is bolted to steel sleepers with a gauge of 3-ft. 6-in., the centre of the rail section making an inclination of 50 deg. against the vertical line. The rack rail consists of three parallel sets of rack bars, 2,637mm. long, 110mm. high, and 20mm. thick, which are placed centrally between the running rails and are bolted to the same sleepers as the adhesion rails. The three bars are spaced 40mm. apart from each other, with the pitch line 55mm. above the level of the adhesion rail. The teeth of the rack bar are of 120mm. pitch. and 60mm. wide at the pitch



Kumanotaira Station Yard



line and about 52mm. wide at the top. The parallel bar is so laid that each tooth makes a displacement of one-third (or 40mm.) against the other.

The ends of the rack rails are provided with a special apparatus known as entrance tongues, so designed as to allow the driving pinions of the engines to gear easily with the racks. The apparatus consists of tongue rack bars bolted together in the same manner as the ordinary rack bars, the entrance tongue being fastened to the steel sleepers by means of elliptic springs. This ensures the rack bars being pressed down, without damage, by the driving pinions of the passing engine. The rack bar of the tongue is, at one end, cut out similarly to the ordinary rack bar, but it is curved at the other end, the height of the teeth diminishing gradually towards the end, until they are smoothed over. The teeth are 3,275mm., 3,315mm., and 3,355mm. in height, the number of teeth being 25 and over per bar.

Power and Distribution

Electric energy is obtained from a steam power station near Yokogawa specially erected for the line. The station contains three 1,000 k.w. vertical turbo-generators, which supply three-phase current at 6,600 volts, 25 cycles. The steam for the turbines is generated in eight water-tube boilers with superheaters and chain grate stokers. The high-tension, three-phase current is transmitted to the two substations through two circuits of underground armored cable, where it is transformed to six-phase current at 240 volts and then converted to direct current at 650 volts by means of rotary converters.

The substations, which are located at the highest and the lowest points of the rack section, are each provided with two 450 k.w. rotaries and 312 cell storage batteries with a capacity of 1,320 ampère hours, which are designed to buffer the fluctuations of load in connection with a 100 k.w. Pirani automatic reversible booster. For feeding purposes, four overhead cables are laid between the substations and connected in parallel through the circuit breaker in the Kumanotaira switch house located at the middle part. An overhead cable is laid between the substations and the termini of the electrified section. The feeder cables are fixed to wooden poles on the open track, while in the tunnels they are carried on brackets.

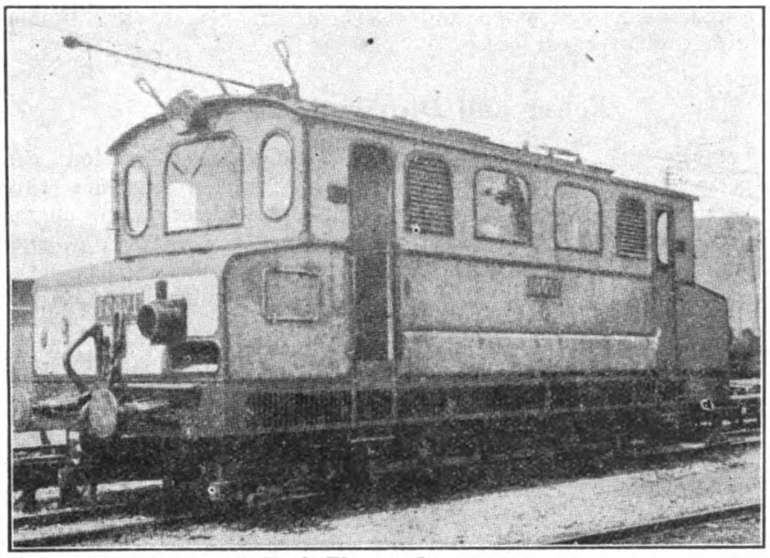
One of the chief reasons for the selection of the low pressure of 650 volts was the difficulty of securing satisfactory insulation in the narrow tunnels, which made overhead high-tension impossible from the outset. On the other hand, with the outputs and current in question, the third-rail system alone could be considered for the line, and this system just came within the limits of practicability for a pressure of 650 volts, when allowance was made for the somewhat moist atmospheric conditions of the tunnels.

The protected under-running contact has been adopted for the third-rail system. The conductor rail in use is a special double-headed steel rail, weighing 90 lbs. per yard, the conductivity of the rail corresponding to about 40 per cent. of pure copper. The conductor rail is supported on malleable iron brackets and a set of porcelain insulators, spaced about 8-ft. apart, and the brackets are screwed to the wooden sleepers, which are, in turn, fastened to the running rails. The contact surface of the third rail is 4-ft. 10-in. from the track centre and is supported at a height of 6¼-in. above the rail level. At the Yokogawa and Karuizawa yards, the current for the movement of a single locomotive is collected with a trolley wheel from an overhead catenary line. The current is returned through the rails and bare cables laid beside the track.

Locomotives

The rack electric locomotives, 12 of which are now in service on the section, are designed with separate drives for the adhesion and rack sections of the line. Each locomotive weighs 42½ tons and is capable of drawing, at a speed of 11 miles per hour, eight cars on a grade of 6.7 per cent. It has two direct current series motors of 330 h.p. By means of gears and parallel rods, one motor is connected with the driving wheels and the other with the rack machine in the inner frame. The driving wheels and the rack machines are designed to work independently of each other. The collection of current is effected mainly by means of shoes contrived to slide along the undersurface of the third rail. The motors are controlled by means of thirty-two contractors, and the controlling current is supplied by an 80-volt storage battery. The controller contains three drums. The main drum and the reversing drum correspond to the drums of an ordinary controller for contractor control, but the third has two auxiliary contractors, which, corresponding to the three positions "adhesion," "rack," and "brake," group the main contacts in the manner required for the different forms of service.

On the adhesion section the locomotive is driven solely by the adhesion motor. The rack motor runs on no-load, and maintains a constant speed, which is approximately the same as that of the adhesion motor. On the rack section the motors work with the usual series-parallel connections, the motors being in series on the first nine steps and in parallel on the remaining six steps. On the ninth and fifteenth steps the motors are shunted. By altering the shunt resistances, the distribution of the load, which changes with the wear of the driving wheel diameter, can be adjusted between the rack and adhesion motors. The first six



A Rack Electric Locomotive

positions of the controller are used for operating the electric brake. For the short-circuit brake, which is always used on down grades, the armature of one motor is connected in series with the field of the other motor and with a set of resistances. This crossed-brake connection makes the brake act with absolute certainty, whether the position of the reversing controller corresponds to the direction of rotation of the motors or not. The current then generated in the motors is converted into heat in the resistances, which are also used for starting up. On down grades the short-circuit brake is supplemented by a vacuum brake. In addition, a hand brake combined with the vacuum brake rigging is provided for contingencies.

Cost

The electrification of the line cost approximately Y.2,269,000, of which Y.763,648 was for the equipment of the Yokogawa power station, Y.311,471 for the two substations, Y.541,065 for the line construction, and Y.472,810 for the locomotive equipment.

Results of Working of Electric Locomotives

The results of working of the electric locomotives over the Usui Pass are given below :—

	Electric locomotives	Mileage travelled by electric locomotives	Vehicle mileage hauled	Current consumption	Current consumption per locomotive mile
		mile	*mile*	*k.w.h.*	*k.w.h.*
1913 ...	10	87,722	536,215	1,642,050	18.72
1914 ...	12	122,155	761,115	2,246,847	18.39
1915 ...	12	136,409	900,879	2,549,124	18.69
1916 ...	12	112,977	743,531	2,241,162	19.84
1917 ...	12	127,444	841,449	2,535,118	19.89

Hands Off in Siberia

By George Bronson Rea

New York, December 19, 1919.—The speech of Premier Lloyd George in the House of Commons yesterday disclosed that the Allies had come to a complete agreement on the question of non-intervention in Russia, but that discussions were proceeding between the United States and Japan concerning future action should the Bolshevist advance reach to any considerable degree east of Omsk. This confirms what was been known here in inner circles, that Secretary Lansing and Ambassador Sidehara have been engaged in conversations regarding Siberia and exchanging views over possible future devlopments and what should be done to check the Bolshevist movement. In these conversations the American and Japanese Governments have approached the matter from different points of view.

The Japanese Government considers the Bolshevist menace as involving the national security of Japan, but the United States, safe and secure by thousands of miles of the blue Pacific between it and danger, does not seem to consider the menace as acute. The American Government recognizes it vital that the Bolshevist machine be stopped in its eastward march, but is apparently unwilling to go further than words to place its policy into effect.

Japan stands ready to co-operate with the United States and the Allies in taking the necessary steps to cope with the danger. The Allies have agreed to keep hands off, so the question is now fairly up to the United States. If the United States is not willing to co-operate with Japan, it is understood that the latter country is prepared at the proper moment to go into Siberia alone.

So we have now reached the point of where a "show down" cannot be much longer delayed. If the United States refuses to co-operate (and neither the President or Congress could involve the nation in such an enterprise) it will not be possible to object to Japan's plans for her own, and China's safety. If the United States refuses to co-operate and China stands by in her usual helpless fashion, Japan will have to face the menace alone, and will then establish her right to be recognized as the dominant Power in the Far East, and to make good on her policy of special interests and the so-called Monroe Doctrine.

The American people will never sanction the sending of another overseas expedition to Siberia to make war against the Russians. We are now reaping the fruits of our unwarranted intervention in these Asiatic affairs, and find ourselves abandoned by our sensible European Allies, and face to face with Japan on the question of paramountcy in her own sphere. Japan has her own scores to settle with Russia, in which the United States is not interested. Our so-called Open Door Doctrine of 1900, which could not be made operative against Russia in Manchuria, paved the way for the Russo-Japanese war of 1904. Japan then paid the penalty, and has had to break the back of her people with enormous taxation to keep prepared for the "come-back" of Russia. Had not the European war intervened in 1914, Russia and Japan would have been in another death grapple on the plains of Manchuria before now.

The Russo-Japanese question is one that concerns Japan alone, especially at this moment when the peace of the Far East is menaced by the rapid spread of the Red Terror toward Irkutsk, China and Japan. Interference on the part of the United States in this vital issue of Japan's future can only result in widening the breach between the two countries. It is time for Americans to learn that they cannot cross the seas and dictate to other virile nations what they shall do when their peace, happiness and security are threatened, when they resent and fight against any interference in their own affairs.

It has been necessary for the Japanese Ambassador at Washington to make an official declaration to the American Government that at no time has Japan entered into negotiations with Mexico looking to the acquisition of special privileges or territory in that country. Intimations to that effect had been conveyed in a recent speech of Senator Fall, and the Ambassador said that these were founded upon misinformation deliberately spread abroad by German agencies which were energetically striving to prevent the displacement of German trade with Mexico by American firms.

Ambassador Sidehara felt it necessary to place on record a denial of the accuracy of these reports, and added that he was Under Secretary of Foreign Affairs in Tokio when the alleged negotiations took place. Most of these rumours had their origin in the Zimmerman note in 1917, which has since been skilfully used by propagandists to make it appear that negotiations of a nature to excite suspicion in America had actually taken place.

This sets at rest the oft repeated story of Japanese intrigues in Mexico. It is now up to the United States to follow a policy of Hands Off in Siberia.

Foreign and Chinese Enterprises in China

So many enterprises are now being inaugurated in China with joint Chinese and foreign capital that we have endeavored, as far as possible, to bring up-to-date a list published some time ago by the "China Advertiser," of Tientsin. So far as we are able to gather the following is a fairly complete list of Sino-foreign companies registered. In this list the nationality of the foreign capitalists is given first, then, in parenthesis, the Chinese name of the joint concern, then the names of the capitalists, the object for which the company has been formed, the amount of capital, date of incorporation, etc.:—

British, French and Chinese (Fukungssu); capitalists, Peking Syndicate and Shansi Board of Trade; enterprise, coal, petroleum and iron in Shansi; Capital, Tls. 10,000,000; incorporated, 1898; redeemed by China in 1908.

British, French and Chinese (Fukungssu); capitalists, Peking Syndicate and Yufeng Kungssu; coal, petroleum and iron in Honan; Tls. 10,000,000; 1898; now operating.

British and Chinese (Huitung Kungssu); capitalists, British Syndicate (Huitung Kungssu)-Huayi Kungssu and Szechuan Mining Bureau; coal, petroleum and iron in Szechuan; Tls. 10,000,000; 1898; now pending.

French and Chinese (Fuan Kungssu); capitalists, French Syndicate-Paofu Kungssu; coal in Szechuan; Tls. 10,000,000; 1899; invalidated by prescription.

Japanese and Chinese (Yicheng Mining Co.); capitalists, Tsurumitsu Dogura-Anhui Commercial Bureau; coal in Anhui; $5,000,000; abandoned in 1905.

French and Chinese (Hohcheng Kungssu); capitalists, Hocheng Kungssu-Paofu Kungssu; petroleum in Szechuan; capital unknown; 1902; pending.

French and Chinese (Yuanhsiang Kungssu); capitalists, (French), Yuanhsi Kungssuang (French)-Tiensheng Kungssu; lead mines in Kwangsi; Tls. 2,000,000; 1902; pending.

French and Chinese (Laifu Kungssu); capitalists, Kaifu Kungssu (French)-Puan Kungssu; lead mines in Kweichow; Tls. 2,000,000; 1902; abandoned.

French and Chinese (Hsiangki Kungssu); capitalists, Hsiangli Kungssu-Paohsing Kungssu; antimony in Kweichow; $6,999,999; 1902; pending.

British, French and Chinese (Lunghsing Kungssu); capitalists, Kunghsing Kungssu-Yunnan Kungssu; various mines in Yunnan; Tls. 50,000,000; 1901; pending.

French and Chinese (Tatung Kungssu); capitalists, Tatung Kungssu-Huayu Kungssu; various mines in Fukien; $7,480,000; 1902; invalidated by prescription.

French and Chinese (Kiangpeimeikwang Kungssu); capitalists, Puchi Kungssu-Paofu Kungssu; petroleum, iron and coal in Szechuan; $17,500,000; 1904; recovered by China and working since 1909.

French and Chinese (Talo Kungssu); capitalists, Talo Kungssu (French)-Tienyi Kungssu; mica and antimony in Kweichow; Tls. 2,000,000; 1905; invalidated by prescription.

German and Chinese (Changhsing Meikwangssu); capitalists, Carlowitz & Co., Representation of Commissioner Yu of China; coal in Shantung; Tls. 8,000,000, afterward increased to Tls. 2,500,000; 1906; recovered by China and now working since 1908.

Russian and Chinese (Russo-Asiatic Russian Bank); capitalists, Chinese Government; Banking; Rbls. 45,000,000; Tls. 3,500,000; 1896.

German and Chinese (Shantung Railway Co.); capitalists, German Syndicate-Chinese Government; Railway and Mining; Mks. 70,000,000; 1898.

German and Chinese (Chinghsing Mining Administration); capitalists, Von Hanneken-Chihli Government; coal in Chinghsing, Chihli; $1,000,000; 1905. Cancelled; operating as Chinese concern.

British and Chinese (Mentowkow Mining Administration); capitalists, British capitalists-Chinese capitalists; coal at Mentowkow; $1,000,000; unknown; abandoned on account of flood.

Japanese, Germans and Chinese (Merchants Guarantee Bank of Chihli); capitalists Messrs. Okura & Arnhold, Karberg-Chinese Government; Banking; Tls. 3,000,000; 1911.

Japanese and Chinese (Penhsihu Mining Co.); capitalists, Okura & Co.-Fengtien Government; coal and iron manufacturing; Y.7,000,000.

Japanese and Chinese (Yalu Timber Co.); capitalists, Japanese Government-Chinese Government; lumber business in Manchuria; $3,100,000; 1908.

Japanese and Chinese (Liuta Flour Mill); Japanese capitalists-Chinese capitalists; flour milling in Shanghai; $200,000; 1907.

Japanese and Chinese (Shanghai Silk Filature); Japanese capitalists-Chinese capitalists; Tls. 400,000; 1906.

Japanese and Chinese (Shanghai Silk Works); Japanese capitalists-Chinese capitalists; Y.100,000; 1910.

Japanese and Chinese (Changtu Co.); Japanese capitalists-Chinese capitalists; various enterprises in Manchuria; $300,000; 1906.

Japanese and Chinese (Yingkow Water and Electric Works); Japanese capitalists-Chinese capitalists; Y.2,000,000; 1905.

Japanese and Chinese (Santai Oil Mill); Japanese capitalists-Chinese capitalists; oil manufacture in Manchuria; $300,000; 1907.

Japanese and Chinese (Seiryu Bank); capitalists, Yasuda Bank & N.C.-Chinese capitalists; Banking in Manchuria; Y.3,000,000; 1908.

Japanese and Chinese (Mukden Horse Car Co.); capitalists, K. Okura-Chinese capitalists; $150,000; 1908.

Japanese and Chinese (Sino-Japanese); Japanese capitalists-Chinese capitalists; match factory in Changchun; $300,000; 1907.

Japanese and Chinese (Hsintai Kungssu); Japanese capitalists-Chinese capitalists; bean cake business in Changchun; $150,000; 1907.

British and Chinese (Kailan Mining Administration); capitalists, Kaiping Mining Administration-Lanchow Mining Administration; coal mining; £2,000,000; 1912.

British, French and Chinese (Fuchung Corporation); capitalists, Peking Syndicate-Chungyung Kungssu; mining in Honan; $1,000,000; 1914.

French and Chinese (Fungfa Industrial Bank); capitalists, French capitalists-Chinese Government; Fcs. 45,000,000; 1913.

Japanese and Chinese (Sino-Japanese Industrial Co.); Japanese capitalists-Chinese capitalists; Y.5,000,000; 1912.

Japanese and Chinese (Shouhsing Mill); Japanese capitalists-Chinese capitalists; flour milling in Tientsin; $250,000; 1915.

Japanese and Chinese (Yalu Lumber Co., unlimited); capitalists, Okura & Co.-Yalu Timber Co.; Y.500,000; 1915.

Japanese and Chinese (Hsunchi Kungssu); Japanese capitalists-Chinese capitalists; mining concern at Shanghai; $2,000,000; 1914.

Japanese and Chinese (Dairen Exchange and Trust Co.); Japanese capitalists-Chinese capitalists; Y.1,000,000; 1913.

Japanese and Chinese (Mukden Trust Co.); Japanese capitalists-Chinese capitalists; $50,000; 1916.

Japanese and Chinese (Kaiyuan Trust and Exchange Co.); Japanese capitalists-Chinese capitalists; Y.500,000; 1916.

Japanese and Chinese (Changchun Trust and Exchange Co.); Japanese capitalists-Chinese capitalists; Y.500,000; 1916.

Japanese and Chinese (China Electric Manufacturing Co.); Japanese capitalists-Chinese capitalists; Y.1,000,000; 1917.

Japanese and Chinese (Shanghai Electric Works); Japanese capitalists-Chinese capitalists; Y.100,000; 1917.

Japanese and Chinese (Yasukuwa Iron Works); capitalists, K. Yasukawa-Chinese capitalists; Y.2,500,000; 1916.

Japanese and Chinese (Kunghsing Iron Works); Japanese capitalists-Chinese capitalists; manufacturing iron tools, etc.; Y.200,000; 1917.

Japanese and Chinese (Sino-Japanese Exchange Bank); Japanese capitalists-Chinese capitalists; Y.5,000,000; 1916.

Japanese and Chinese (Chinetao Railway Co.); Japanese capitalists-Chinese capitalists; Y.1,000,000; 1918.

Chinese and French capitalists (Banque Industrielle de Chine); capital, Frs. 75,000,000; 1913.

Chinese and Japanese Trust Company (Dairen Trust Company). Unregistered; 1913.

Chinese and Japanese Industrial Company (Chung-Erh-Shih-Yeh Kungssu), Peking; capital, Y5.000,000; 1914.

Kung-Shin Iron Works. Unregistered (not registered with Central Government); 1914

Chao Sing Flour Mill. Unregistered (not registered with Central Government); 1915.

Chinese and Japanese capitalists (Yalu Lumber Company), Changchun; $1,000,000; 1915.

Chinese and Japanese capitalists (Fengtien Trust Company). Unregistered (not registered with Central Government); 1916.

Chinese and Japanese capitalists (Kaiyuan Trust Company). Unregistered (not registered with Central Government); 1916.

Chinese and Japanese capitalists (Changchun Trust Company). Unregistered (not registered with Central Government); 1916.

Chinese and Japanese capitalists (Anchuan Iron Works): principal works in Mentze, Island of Kushu, Japan; capital, Y 20,000.000; 1916.

Chinese and Japanese capitalists (The China Exchange Bank), Peking; capital, Y.10,000,000; 1916.

Chinese, American and Japanese capitalists (China Electric or Chung Kuo Electric Company), Shanghai; capital, $1,000,000; 1917.

Shanghai Electric Company. Unregistered (not registered with Central Government); 1917.

Chinese and Japanese capitalists (Tsingtao Railroad Company). Unregistered (not registered with Central Government); 1918.

Chinese and Russian capitalists (The Russo-Asiatic Bank); capital Rbl. 55,000,000.

While America Dreams

China Gets Her Credit for Equipment in Europe

As substantiating the statement he made in an interview in "The Wall Street Journal" recently, that American bankers and business men did not know how to extend credit in foreign trade and seemingly lacked the courage to find out by experience, Guy Morrison Walker related the following concrete instance of the manner in which European manufacturers were taking highly profitable orders while Americans were thinking about it:

"In August last one of my Chinese friends, who controls the railway supply business of the Chinese Government Railways, cabled asking me to arrange, if possible, for a five-year contract to furnish railway supplies for six thousand miles of Government Railways owned by the Chinese Republic. My Chinese friend asked what proportion of cash American bankers would require and what credit on the unpaid instalments they would grant, suggesting that the Railways Administration would pay 25 per cent. cash on all such supplies and would issue Railway Administration notes in three equal annual instalments for the balance at 8 per cent. with a commission for handling the business and a 5 per cent. commission for the three-year credit on the 75 per cent. of cost.

"I submitted this not only to several of the leading railway equipment and supply companies, but to several of the largest banking interests. Without exception the railway equipment and supply people declared that it was utterly impossible to grant credit such as requested by the Chinese Railways. The banking interests, while admitting that an 8 per cent. Chinese Railway note at a 5 per cent. discount for an average of only two years was attractive, declared that they were of the opinion that such a note issue by the Chinese Railways Administration would be an investment security of the kind contemplated to be handled by the International Banking Consortium for loans in China.

"I called their attention to the fact that it was nothing but a trade credit and would be issued primarily to the railway equipment and supply companies for equipment and supplies furnished Chinese Government Railways, and, while the obligation issued by the Railways Administration was in the nature of a Chinese Government obligation, still their purchase of it would be from the equipment companies rather than from the Chinese Railway Administration, and that anyhow the International Banking Consortium was not in existence, but was merely proposed and in a tentative state. But the banking interests here took the position that even if the International Banking Consortium had not been definitely organized still they felt that before granting such a creditor buying such equipment notes they would have to submit the matter to their associates in the proposed International Banking Consortium.

"This information I was compelled to cable back to my Chinese friend, with the result that much as he desired to break away from European connections and do business with America, he was compelled to turn back to his old connections, with the result that the contract for railway equipment and supplies, which would have amounted to about thirty millions of dollars during the five-year period, was divided between Vickers, Inc., of England, and a French company, upon the following extraordinary terms: Vickers, Inc., took the railway equipment business without cash payment down and accepted notes payable in ten annual instalments at 8 per cent. with a 5 per cent. discount from par for financing the credit, and the notes so issued to Vickers, Inc., were sold to the British investing public at 98 and were largely over-subscribed at the public offerings. The French company accepted their part of the railway supply business upon fifteeen years' credit to Chinese Government Railways, interest only to be paid after the first five years and the principal of the notes to be paid in ten annual instalments beginning at the end of the sixth year.

"Think of such credit as this:—Ten years from the British and fifteen years from the French to the Chinese Government Railways on the whole amount without any cash payment down, while this business was offered to and declined by our American equipment and supply men and by our American banks on a basis of 25 per cent. cash and one, two and three years for the balance.

"When this information came I passed it on to the American bankers and called their attention to the fact that while they might have had scruples against considering this business as commercial business, their French and English associates in the International Consortium had labored under no such scruples but had grabbed the business.

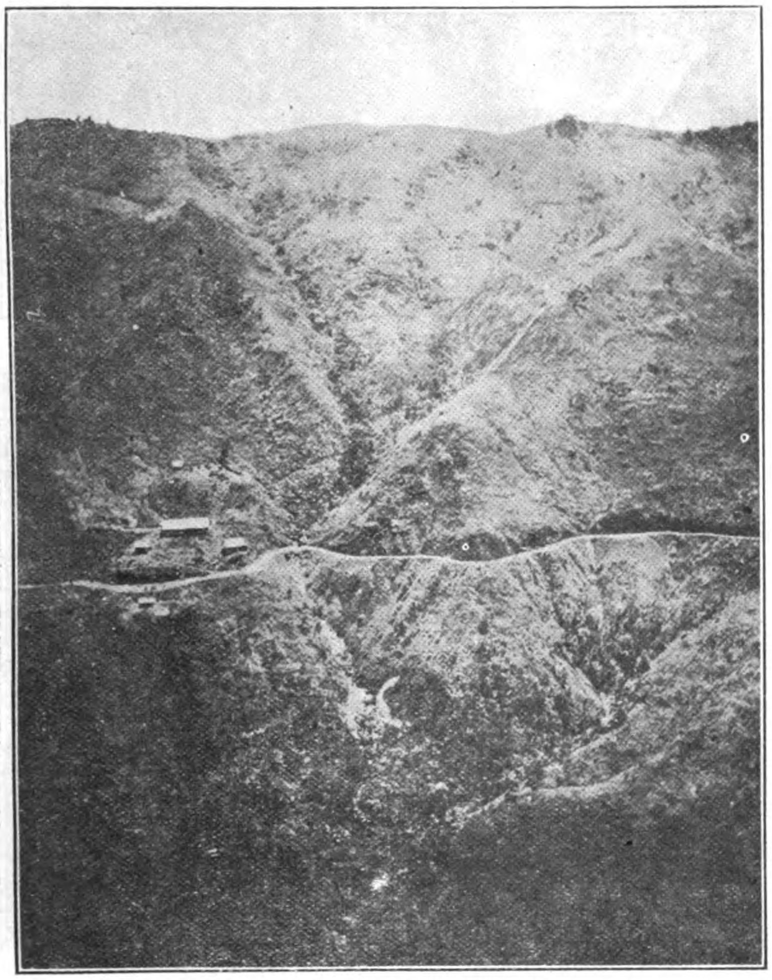
"Thirty millions of dollars of railway equipment and supply business was in this manner lost to American manufacturers, but the saddest part of it is that the prices being paid to the French and English manufacturers was almost double the current prices quoted for similar equipment by our car companies and supply men. In other words, as the price of the credit asked by the Chinese Railway Administration, the English and French manufacturers have not hesitated to double the prices of the equipment sold, so that the interest on the notes amounts approximately to 16 per cent. on the actual cost of the equipment, and when the notes are half paid they will have received as much as our American manufacturers would have asked and probably as much as the equipment cost them, while the remaining five instalments will be clear profit.

"This is only one single example. I can tell you a dozen other stories equally significant."

Land Transportation in the Philippines

By Frank J. Dolan

THE task of building and operating a railroad through a tropical country that is bounded on one side by towering mountain ranges and on the other by low, fever-breeding swamps is, in itself, a gigantic undertaking. But when added impediments to its construction present themselves in the form of warlike unfriendly tribes roaming across the right of way and destroying the tracks, and a scarcity of the skilled labor so vitally essential to such a project, the proposition begins to appear foolhardly and well-nigh impossible.



Mountain Road in Albay Province

Nevertheless, these, and many more, were the obstacles which were confronted and successfully disposed of by the Manila Railway Co. (Ltd.), of London when it constructed the first railroad in the Philippine Archipelago, which was completed and placed in operation on November 24, 1892, having occupied approximately five and one half years in building.

The original line extended from Manila to Dagupan, in southern Luzon, a distance of 195.39 kilometers. The estimated cost for the project was P.4,964,400, as against an actual cost of P.7,899,000, or slightly over P.40,000 per kilometer. During the period of construction and for ten years thereafter, all material and supplies used on construction were declared exempt from the payment of customs duties, and as additional government aid the Philippine treasury guaranteed 8 per cent. interest on the investment for two years of the construction period.

The road continued to operate for a period of about five years and its success seemed to be insured, but in May, 1898, simultaneous with the destruction of the Spanish Fleet in Manila bay by Admiral Dewey, the revolutionists destroyed the road at various junctures and thereby seriously interrupted further operation.

On behalf of the Company's London interests, the English consul at Manila lodged a formal protest with the Spanish authorities against further interference with the operation of the road, but this was answered by the Spanish Governor-General to the effect that to operate the road would "aid and abet the insurgents."

The roadbed was restored and traffic resumed in August, 1898, the beginning of the American occupation, but this era of prosperity was short-lived, lasting only until the opening of hostilities between the American and Filipino forces in February of the next year.

Peace was restored early in 1900, and the railroad management set about the task of reconstructing destroyed bridges and roadbed, repairing the wrecked rolling stock and rebuilding the station buildings which had been burned along the line. Some of the supposedly "temporary" station buildings hastily erected during this period still remain to be reconstructed.

As soon as a lasting peace was assured the company entered upon an extensive program of construction, and from 1906 to 1913 extended its lines both north and south, but at the end of the latter mentioned year financial difficulties prevented the continuation of construction operations on the northern extension of the line to Baguio, which is six thousand feet above the level of Manila. The roadbed on the Baguio location was completed in some sections, and in the others approximated completion. One tunnel near Aringay was completed, including the construction of concrete portals and concrete lining throughout, while for the four other tunnels small openings were driven through. Track was actually laid for a distance of approximately twelve miles from Aringay towards Baguio. On this portion a few of the steel bridges were constructed, while steel bridges and rails for the entire line complete were on the ground ready for placing. This involved the expenditure of P.4,767,350.41, which practically crippled the financial resources of the Company and started it on a gradual decline from which it never recovered.

In the years 1915-1916 the country was in a bad economic state owing to frequent droughts which killed much of the crops and terrific typhoons in the southern part of Luzon, some of such an intensity as to blow down and render useless whole coconut groves. During this period the Railroad Company carried very little freight, and, finding itself again financially embarrassed, opened negotiations for the sale of the road to the Philippine Government, into whose hands it eventually passed on January 8, 1917, after what was probably the unluckiest operating career in the history of railroading.

During the last three years of Government ownership the railroad has been undergoing a process of semi-reconstruction, under the supervision of American railroad experts, and its present prosperity far exceeds the fondest hopes held out for it by the Government officials prominent in advocating its purchase.

In the three years immediately prior to Government ownership a loss of P.116,887.90 was shown for 1914; P823,564.05 for 1915, and P.432,490.06 1916. During these three years the price of coal, one of the chief items of expense for the Company, ranged from P.11 to P.14 per ton.

A profit of P.816,369.39 was realized in 1917, the first year of Government ownership, although the average price of coal had risen to P.16 per ton. In 1918 the activities showed a net profit of P.248,742.89, notwithstanding an increase of P.24 in the price of coal. The profits for 1919 will be more than P.400,000.

At the present writing the system is operating over 654 miles of solid roadbed, and 36 miles more are under construction. The rolling stock includes about 1,800 freight cars with a carrying capacity ranging from 7 to 28 tons, 25 first class coaches with accommodation for 40 passengers, and 200 third class coaches of a 90 passenger capacity. The Company does not operate a second class service.

One hundred and twenty-seven engines, many of them of the powerful Compound Mallatt type, keep the service toned

to its highest point of efficiency, and the cars and engines are repaired at the Company's repair shops at Caloocan, about six miles from Manila.

Three railroad yards located in and around Manila are capable of housing the full complement of the company's rolling stock.

The Philippine Railway Company, an American-owned concern, operates two small roads in the southern islands, the largest of which is on the Island of Panay. This road connects Capiz, in the north with Iloilo, in the south, the two principal ports of the Island, and the division covers a total kilometerage of 116.1.

With the railroad operating in the principal provinces of Panay, communication and transportation between all the larger villages and barrios is possible, and the agricultural and industrial productions of the interior part of the Island are now easily transported on the railroad connecting either at Capiz or Iloilo for Manila or foreign country bound steamers.

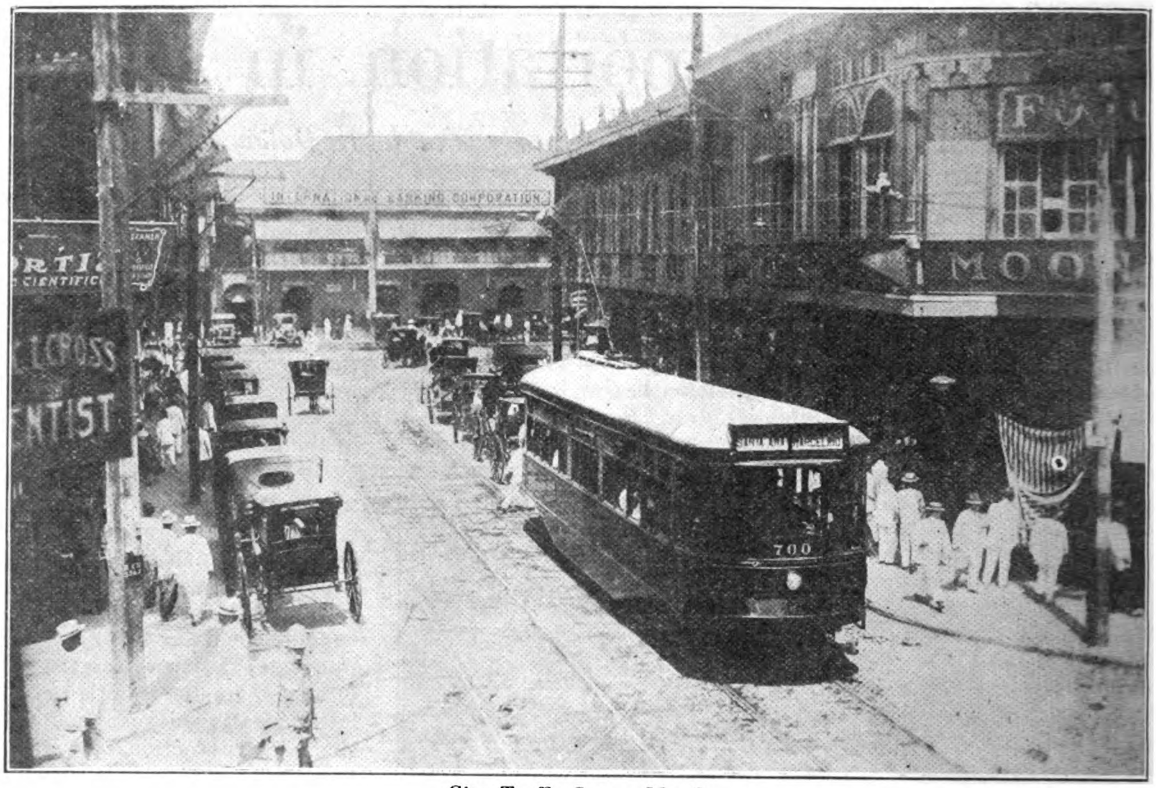
The Cebu division covers a total of 95.1 kilometers running north and south and passing through the city of Cebu. With the Iloilo and Cebu lines combined together the Philippine Railway Company records a total kilometerage of 211.7 of track in operation.

Forty-nine passenger cars and 119 freight cars, the latter totaling a capacity of 5,198 tons, were in use during 1918. With this limited number of cars the Company transported 1,551,301 passengers and 96,614 tons of freight; the former netted the Company a total sum of P.604,-946.82 and the latter P.293,728.01.

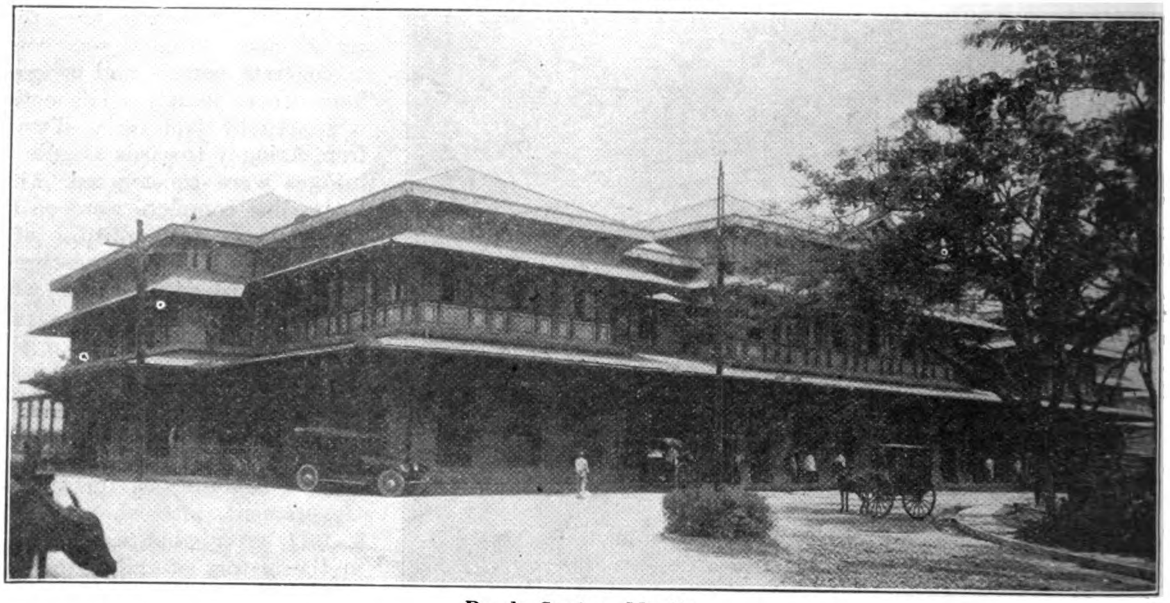
Owing to the improvement and maintenance of the railway in the principal islands of the archipelago, commercial, industrial and agricultural business has greatly improved. Negotiations now are in progress looking to government ownership of the Philippine Railway system.

The motor truck system of feeding the railroads in the agricultural districts has contributed in a large degree to the present era of prosperity. Many of the most productive plantations are situated miles from the railroad, and depend wholly upon truck trains in transporting the products to the railroad.

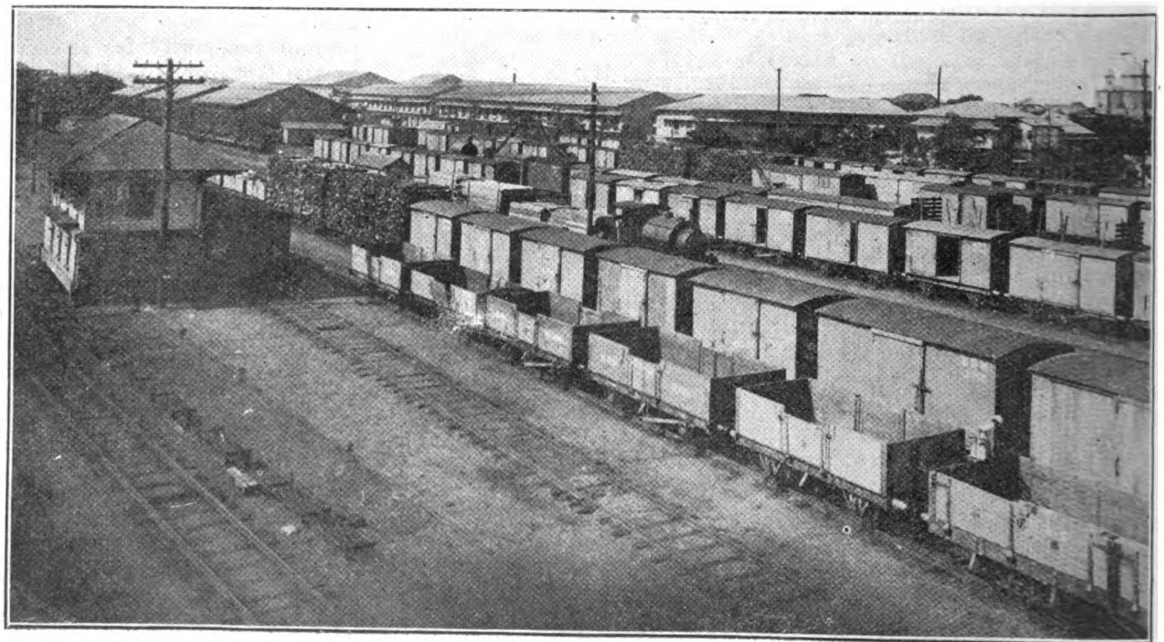
In June 1919, 973 motor trucks with a carrying capacity



City Traffic Scene, Manila



Pondo Station, Manila



Freight Yards, Manila

of 7,634 tons were operating in the Philippines, together with 5,612 pleasure cars.

Roads, as the principal factor in land transportation, is receiving the greatest attention of the Government. Improvement, construction and extension of good roads all over the Islands are being undertaken in order to facilitate better means of transportation. As a result, there are now, according to the latest report of the Bureau of Public Works: —

	4090.2	Kilos.	of 1st class	road.
	2015.8	,,	,, 2nd ,,	,,
	3128.7	,,	,, 3rd ,,	,,
and	9234.7	,,	,, Total	roads.

In each province good roads are maintained chiefly between the capital and the adjoining towns or places of commercial importance in order to afford quicker means of communication and transportation.

Train Entering Paco Station, Manila

"Little Hsu" and Mongolia

General Hsu Shu-cheng, High Commissioner for the North Western Frontier and Comptroller General for the Reorganization of Outer Mongolia, to bring about the desired regeneration of this vast territory feelingly urges the following:—The increase of population, the development of the natural resources of Mongolia, systematic education for the people, a revival of the Buddhist religion, a "benevolent administration," the development of fundamental industries, the breeding of livestock, and the promotion of trade. He says in part: "The population of Mongolia has been decreasing steadily since the Yuan and Ming Dynasties and if means are not devised to counteract this and increase the population, I fear that in the course of a hundred years Mongolia will be more or less uninhabited. He thinks that the extinction of such a race is more than national pride can tolerate. We think there is little need for his worries concerning Chinese propagation, the most simple of living conditions being made equal.

"Mongolia is rich in timber and minerals; but both forests and mines are undeveloped. A tremendous source of wealth for China is lying there waiting—for perhaps the 'Benevolent Administration' to develop

"The geographical position of Mongolia makes education difficult. As in most inland places in the East the people are illiterate. The books in the Mongolian language are few, consequently the views of the people are narrow.

"The Buddhist religion may do as well as any other for the needs of Mongolia. It has many fine tenets. Mankind has not yet arrived at the place where an abstract religion can supply spiritual craving. Until such time, one personal religion may be as good as another for the working out of a nation's destiny.

"So far as the 'Yellow Faith' (that section of Buddhism worshipped in Mongolia) is concerned the Mongolians may do well to return to it with zeal for—'On examining into the question it will be seen that the Yellow Faith is the common bond which holds the people together.'

"The development of fundamental industries in Mongolia, the breeding of livestock and the promotion of trade are interdependent.

"To develop the fundamental industries means the production of necessities, for example food-stuffs and clothing. The Mongolian people eat beef and mutton and wear woollen clothing.

"The country can produce rice, wheat and tea; the cultivation of which constitutes the fundamental industry of an agricultural people. The exchange of these articles form the basis of trade."

General Hsu Shu-cheng in a spirit of splendid camaraderie has said:—"I herewith sincerely request my brethren, no matter whether you be priest, soldier, merchant or official to submit to me, without delay, any views you may have to express for consideration."

War Memorial for Shanghai

It has been finally decided by the Shanghai War Volunteer Memorial Committee that a Cenotaph, or other suitable memorial, be erected on the Bund at the end of Avenue Edward VII, on the site originally selected by the Joint Commission appointed by the Municipal Councils of the French and Foreign Settlement. Other sites were suggested, but the Committee, after having given the matter full consideration, came to the conclusion that the site first chosen is most in keeping with the purpose and sentiment of the memorial. Mr. R. C. Turner, Mr. S. J. Halse, and Mr. H. Boissezon undertook to frame conditions which shall govern the competition, open to Shanghai architects, for the memorial design, and they will act as assessors. First, second, and third prizes of Tls. 750, Tls. 500 and Tls. 250 respectively are offered, and the competition will close on April 15. The designers are limited to a cost of Tls. 25,000 for the Memorial.

Various suggestions for an additional memorial of some practical nature were discussed by the Committee, consideration being chiefly given to proposals for the establishment of a Commercial Museum. It was found that the Shanghai General Chamber of Commerce and the Chinese Chamber of Commerce were disinclined to favor this scheme, and as without their support little success could be hoped for, the proposal has been abandoned. The matter will remain in abeyance until the subscription list has been closed. Should funds then permit, after the cost of the Cenotaph has been met, the question of some memorial of utilitarian character will be again considered by the Committee.

Policy and Finance in China

By Sir Charles Addis, Manager in London of the Hongkong and Shanghai Banking Corporation

THE opening up of undeveloped resources in foreign countries raises problems much wider than that of bank organization. In this form of trade more than in any other, Governments tend to intervene and industry blends with politics. In particular this has happened in the Far East, where China has offered an immense field for the concentration and development of international politico-finance.

For a general survey of the movement we need not go further back than the early nineties. In 1894 China lay at the mercy of Japan, but the latter had to forego the fruits of victory by the veto imposed, by a condominium of the Powers, Russia, France, and Germany, on her territorial acquisitions in Manchuria. The position of England, who stood aloof, neither supporting Japan against the Powers nor joining the Powers in despoiling Japan, was not an enviable one. The star of France and Russia at the Court of Peking was in the ascendant. A further blow to the prestige of Great Britain, so it was thought, was the loan concluded by France with China in the following year for 400,000,000 francs. As a counter-stroke to that loan, and in order to retrieve her prestige, England entered into a pact with Germany for an equal share in Chinese Government finance, the result of which was seen in the two Anglo-German loans, issued in 1896 and 1898, for an aggregate sum of £32,000,000.

The point to be emphasized is that these were purely financial loans. They carried with them no direct economic advantage, nor can they be said to have benefited, except partially and indirectly, the industries of the lending countries. The transaction, which involved the diversion of a certain amount of domestic capital and its transfer to a foreign country, cannot be justified upon the grounds of economic advantage; it must stand or fall by the value attached to the political prestige which it was the purpose of the loan to establish, and the extent to which it succeeded in achieving that object. In the end the results were found to be illusory No evidence has been adduced of any gain in prestige to the countries making financial loans compared with those who abstained.

It was felt that something more tangible than prestige was required, and in 1898 we find Germany established at Kiaochow, Russia in Dalny, France at Kuang-chouwan, and Great Britain in Weihaiwei. China appeared to be breaking up, and each of the Powers was anxious to secure a reversion of the fragments for its own nationals. The Anglo-German agreement was extended with a view to delimit the interests of these two Powers in China, and England claimed the Yangtze Valley as her share. To the policy of prestige succeeded the policy of "spheres of interest." It is a difficult policy to maintain, this exclusive right of one country to exploit the industrial resources of a portion of another country, unless you are prepared to fight for it, and for that, when challenged, it was found the Powers had no stomach. Germany promptly repudiated England's claim to the Yangtze Valley, and it was certain that English public opinion would not support the Government of the day in maintaining the claim by force of arms. "Spheres of interest" gradually shaded off into "spheres of influence," that is, the preferential right of exploitation on terms as favourable as may be offered by others, and the battle for territory was succeeded by the battle for concessions to build railways, the bulk of which were secured by Great Britain.

The long period of cheap money which culminated in 1898 was favorable to the new policy of economic advantage, and, had it not been arrested by the Boer War in 1899, the history of China during the last two decades might have had to be re-written. It is at least arguable that if the railway programme had been carried out the general improvement in the condition of the people which might have been expected to accompany an extension of the means of communication would have gone far either to allay the popular discontent, which was the cause of the revolution, or to strengthen the hands of the Government in quelling it.

Unfortunately the Powers found it easier to exact concessions than to fulfil them. It was not until 1904 that the construction of the first of the railway concessions obtained in 1898 was begun, and to this day the bulk of them remain a dead letter. Still, so far as it was carried out the results of the railway policy were favorable both to the lending and to the borrowing countries. The labor and capital of each were stimulated. The defect of the policy was that it went too far and too fast. Obsessed by their political aims the Governments were reckless of finance, and in their anxiety to peg out claims for posterity the Powers entered with light heart into contracts without regard to the ability of their nations to carry them out within a reasonable time. On these terms it was plain that any Government, however weak its economic position might be, could take a hand in the game. The Chinese were only too ready to play off one Government against another, and in an Oriental country the powers for obstruction, even of the weakest, politically were found to be formidable. It was always possible by offering better terms, even if the last thing you desired was that they should be accepted, to put a spoke in your neighbor's wheel, and then to make the offer of a withdrawal of your opposition a condition for securing a share of the enterprise for yourself. International competition ran riot. Politics and finance proved a dangerous admixture in an Oriental country with a weak and unstable Government. It was doubly damned, for it inevitably led on the one hand to political corruption and on the other to wasteful and unprofitable finance. The position became intolerable and a remedy had to be found.

The natural remedy for the evils of excessive competition is co-operation. In 1910 Great Britain, France, Germany, and the United States bound themselves to seek no exclusive advantage in China and to share on equal terms any concessions which each of them might obtain. The Four-Power Consortium, as it was called, was later increased to the Six Power Consortium by the inclusion of Russia and Japan.

It is significant of this change of international policy, it might perhaps better be said of international attitude, that the first task the Six-Power Consortium took in hand was no longer to acquire profitable concessions for themselves but to redress two of the most urgent needs of China. It is not too much to say that the misery of the populace in China may be ascribed in large measure to the corruption of the administration and the chaos in the currency. The object of the Six-Power loan agreement for £60,000,000 was the reform of the one and the rehabilitation of the other, by the completion of the loan, the first instalment of which, for £25,000,000, was issued by the Five-Power Group in 1913. The Americans did not participate in this issue, but there is reason to believe that their withdrawal was only temporary.

It is too soon yet to speak of the results of the new policy, the practical application of which has been interrupted by the outbreak of the European war, but it would seem to be in the line of the general trend of public opinion in favor of setting up some sort of international organization after the war for reducing to harmony the conflict of national ideals. The banking and industrial groups which compose the Consortium have been the subject of some acrid criticism, but in this respect it may be claimed for them that they were in advance of the Governments in pointing the way to a higher conception of international politics.

The policy of foreign industrial loans has been criticized on the ground that under the dominance of British free trade ideas the borrower is left free to purchase his material in the open market, and that, unless a stipulation is made that the proceeds of the loan shall be expended in this country, there is a danger of the orders going to other countries whose manufactures would in this way be benefited at the expense of our own. Experience, however, has shown this fear to be illusory. To demand such a stipulation is to court suspicion. If granted at all it will be granted unwillingly or hedged about with such qualifications as to make the concession not worth the having. It is one of those cases in which, as the practical man knows, the best way to obtain what you want is *not* to ask for it. In practice trade follows the loan and orders follow the engineer. Place an engineer from the Clyde at the head of any industrial undertaking and you may safely dispense with any stipulation as to the provenance of material. Invite tenders from the wide world; frame your specifications in such a way as to suit the engineering standards of different countries; it will be of no avail. In the end you will find, no one can quite say how or why, that your railway, or your bridge, or whatever the undertaking may be, is become as Scotch as the engineer himself. How all this comes about nobody knows, except perhaps the engineer, and he won't tell. But, broadly, the fact is as we have stated it. Apparently free trade, like wisdom, is justified of her children.

The real objection to these loans is not industrial but political. Undoubtedly the original concessions for railways in China yielded a profit to those who undertook them, but the blending of politics with finance proved fatal to its continuance. The rivalries and jealousies of the Powers resulted in an international competition by which the profits of the undertakers were reduced to the vanishing point, and, what is more important, the productive power of the lending country was impaired by the diversion for political ends of the national capital from more advantageous employment at home to less advantageous employment abroad. We must not ask of human nature, still less of a Government, more than it has to give. It is not always, perhaps not often, possible to separate politics from finance, but it is clear that their interests are not necessarily identical, and the assumption is that they are better left to operate independently. The burden of proof lies with those who propose any departure from the general rule. The economic loss involved in the use of finance as a political instrument must in every case be justified by a demonstration of a compensatory national advantage.

The last phase of international finance, namely, the substitution of co-operation for competition by the formation of a Consortium of national groups, is open to the criticism that it reduces nations of varying degrees of economic strength to a dead level of uniformity; that it confers, to the detriment of its competitors, a quasi-monopoly on the representative group by investing it with the exclusive support of its Government; that since a joint tender for any international contract must be at a price which will suit the least efficient of the Consortium groups, the tendency is to restrict freedom of competition and to reduce the national revenue of the more efficient countries by raising the unit cost of production.

To these objections, which are perfectly valid, it may be urged that half a loaf is better than no bread. It is at least open to question whether the absolute supremacy of Great Britain in industry and finance can be maintained in face of the growing competition of countries with larger natural resources and more rapidly increasing numbers, such as the United States with more than twice her population, and Germany with half as much again. And if it be true that the effect of unbridled political competition in exploiting undeveloped countries is to demoralise both lender and borrower, then it may be to our interest to accept an equal share of the advantages on reasonable terms with other countries rather than to enter into a sort of Dutch uaction to outbidpur rivals in the hope of converting a present loss into a future gain by ultimately securing the share we consider proportionate to our merits.

As for the quasi-monopoly conferred on a particular group by the exclusive support of its Government, you cannot in the nature of things expect to enjoy the benefits of an international association without some restriction on the free and independent action of the national units of which it is composed. The group must be a unit representative of the nation if the groups of the other nations are to co-operate with it on equal terms. There would be no object in the Powers forming a partnership for the purpose of restricting competition among themselves, if it were left open to any one of them to form a second national group untrammelled by the conditions imposed upon the collective action of the Consortium and free to compete with it. No group would be willing to undertake the expense of a preliminary investigation of any great industrial enterprise in the foreign field, the cost of surveys, the maintenance of a staff of experts, etc., if it were liable to be deprived at the last moment of the reward of its labors by the intervention of some competitor, foreign or native, who, by the very fact that he has contributed nothing to the initial expense, is in a position to secure the contract by offering more favorable terms than the original undertakers. Under a protection *régime* the Continental group is enabled to provide against internal competition by means of trusts and cartels, and against external competition by means of a tariff. In free trade England the difficulties are not so easily overcome. The group are exposed not only to the competition of foreigners but to the competition of their own countrymen, and, unless they can secure the exclusive support of the Government, they are not in a position to join with other groups in a joint industrial undertaking. Some degree of national monopoly would appear to be inseparable from any form of international industrial or financial association. There is just this to be said by way of mitigation, that, as it is manifestly impossible to comprehend in one Consortium all the industrial nations of the world, the quasi-monopoly, such as it is, is likely to be tempered by a good deal of international competition from those outside the pale.

There are other and more serious dangers to be feared from within, in the graver issues involved in the combination of finance and politics of which a Consortium is compounded. The balance between the two may be so unevenly adjusted as to afford the groups an opportunity of bending the policy of the Powers to the prosecution of the selfish and noxious aims of a certain type of cosmopolitan finance. Or it may be that one of the Powers may be able to deflect the policy of the Consortium in favor of its own national interest by inducing it to grant a preference to its friends or to inflict a boycott on its enemies.

The reality of these dangers is undeniable. They can only be kept in check by a rigid insistence on the transactions of each group being exposed to the light of day and subjected to a persistent and searching public criticism in the country of its origin.

It passes the wit of a man to devise a scheme which shall be invulnerable to criticism at all points, but upon the whole, in spite of its admitted defects, we are disposed to believe that, within the domain of Government-assisted finance, the substitution of international co-operation for international competition will be found as a policy the least open to objection. It is the only means left to us for keeping the door open to trade in undeveloped countries, and, in view of the vital importance of that policy to a free trade country, the argument in the case of Great Britain would appear to be conclusive were the difficulties in the way of international co-operation ten times greater than they are. It is a policy in accord with the spirit of the times as embodied in the project of a League of Nations, a project which it is manifest can never be brought to a successful issue if it fails to take account of the urgent need of reducing to harmony the economic as well as the political discords of the democratic nations. Political peace! Industrial peace! It is the dream of a war-worn world. If it is not to remain a dream, if it is ever to be translated into reality, it can only be effected in international Government finance through the medium of representative national groups working in concert for a common end under the supervision of their Governments and, in the domain of international trade proper, through the complete freedom of the individuals of different countries to exchange their commodities without let or hindrance on the part of the State.—"The International Review."

The Pacific Cable Question

The discussion which has been proceeding for some time on the subject of a new cable across the Pacific from the United States continues unabated, and has received a fillip by the recent break in the Pacific Commercial Company's cable. That a new cable will be laid is certain, but at the moment no decision as to the route has been arrived at. Some interesting information on the subject was given recently in an open letter by George G. Ward, Vice-President and General Manager of the Commercial Pacific Cable Company, to Senator Wesley S. Jones, Chairman of the Committee on Commerce, U. S. Senate, Washington, D.C. Mr. Ward writes:

"Now, as to laying another Pacific Cable. Our present cable line runs from San Francisco to Honolulu, Midway, Guam, Manila, and Shanghai, China, with a spur line from Guam to Japan. That cable line is more than ample to provide rapid service with the Philippines and China, if it could be relieved of the larger volume of traffic with Japan. The route along the line of the present cable has been carefully surveyed—and this is valuable information. A second cable from San Francisco to Honolulu and Midway would merely be supplemental and not initial, which would be an important factor in annual station expenses as well as office installation. San Francisco is the largest land telegraph terminus on the Western Coast, with direct land-wire facilities to important centres in the United States, which gives it a great advantage over any other landing point in serving public demands. When we laid our present cable in 1902, the Postal Telegraph Company, our land-line system in the United States, strung a special copper wire from San Francisco to New York exclusively for the rapid transmission of Pacific Cable traffic. This wire has since been supplemented by additional landline facilities between the East and the West, terminating at San Francisco. Taking all these very important facts into consideration, we intend to lay our new cable from San Francisco to Honolulu and thence to Midway, thus duplicating our present cables as far as that point, and from Midway we have in mind laying a cable direct to Tokio, Japan, or by way of Guam. Such a cable would provide an excellent and rapid service with Japan, which would be an advantage to the large number of American merchants trading with that country. This will allow the present cable to be used entirely for Philippines and China traffic, for which it will be more than ample.

"When we laid our present cable in 1906 we desired to extend it to the mainland of Japan direct, instead of landing it at Bonin, but the Japanese Government preferred to have us stop at Bonin and lay a cable themselves from Tokio to Bonin to meet us. We believe that if we could secure the right to land the new cable in Japan and operate it ourselves with our own staff and under our own supervision, we could improve the quality of service obtained under present conditions. Or instead of laying a cable from Midway to Japan direct we could duplicate our present cable from Midway to Guam, thus providing one cable line from San Francisco to Guam and thence to Japan by way of Bonin, and another cable line from San Francisco to Guam and thence to Manila and China.

"There has been discussion of a cable route viâ the Aleutian Islands, Alaska, and this proposal has received some favorable mention from the Department of Commerce and others. The best judgment of expert cable engineers is that the Northern route is unfavorable, both because of climatic and actual operating conditions. The ocean bed over that route is bad. The tides around the islands are rapid and uncertain, and the islands themselves are volcanic. The shocks of earthquake and volcanic phenomena are of frequent occurrence and disastrous to cable working. The whole region is fog bound for months in the year, and as a consequence repairs in the cables during certain portions of the year and at long stretches at a time would be impossible. The numerous relays which would be necessary would slow down the speed of the cable and be productive of errors. The route which we propose to take has been tried to Midway by our present Pacific Cable, which has been laid for 16 years, and in all that time there have only been four interruptions in the cable between Guam, Midway and San Francisco. The greater number of interruptions have been west of Guam, namely, between Guam and Shanghai, principally in the San Barnadino Straits, and this condition we are now remedying by diverting the cable away from those dangerous straits, although that improvement is at present held up by delays of the Philippines Government in granting a permit to use the highway across Luzon. There can be no question as to the choice of routes. The Northern route would be an absolute failure in so far as maintaining economical direct and prompt cable service between the Far East and the United States is concerned.

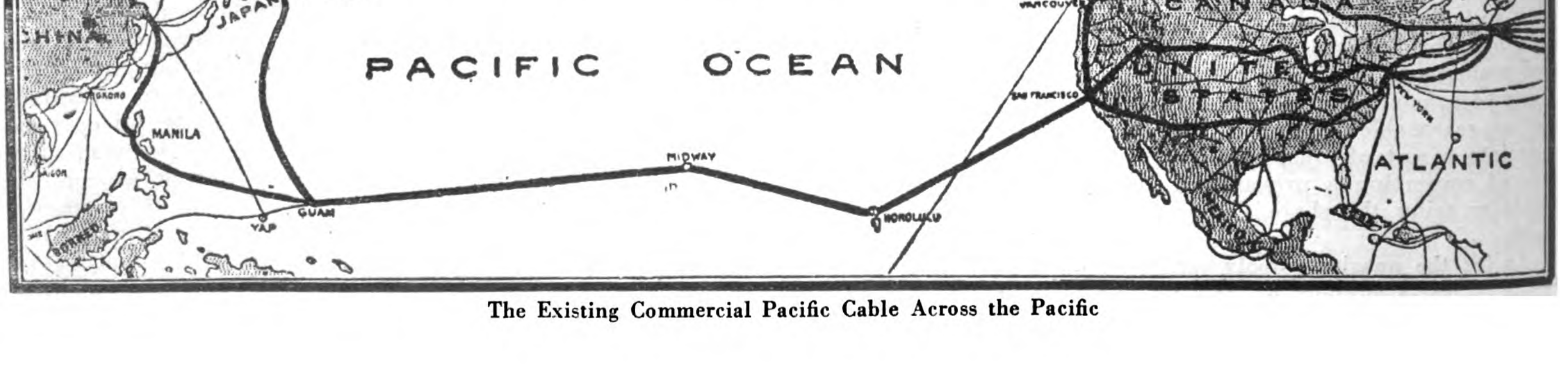
High Silver Hurts Trade with China

The Foreign Trade Bureau of the American Express Co., in a statement prepared for American importers and exporters, declares that, from the viewpoint of future trade development with China, the continued high value of silver had a certain menace. Quoting from Consul-General Anderson of Hongkong to the effect that, unless exchange falls, China must sell its products for about half what it has heretofore received in silver—or must expect to see its trade go to other countries producing goods on a gold basis, the bureau goes on to say that China's value to United States as an export market depends on her buying power.

Her buying power, it is pointed out, in turn, depends largely on what China can sell abroad. As the high price of silver acts to restrict the volume of Chinese exports, by just that much will China's value as a market for American goods be impaired, because of the consequent restriction of her wealth and purchasing power.

Before the war China's import trade was considerably greater than her export business. Now the tide has swung the other way, and China's exports far exceed her imports. As a result, large remittances of silver must constantly be made to China in payment of these purchases, and naturally the greater part of these silver remittances go from the United States, which has the greatest silver market.

Chinese silver exporters expect and demand payment in silver for their products. Therefore, a shipment of silk valued at 100,000 Hongkong silver dollars, which three years ago would have cost an American importer $50,000, will now cost him $100,000, this increase being due solely to the rise in the price of silver. This takes no account of the increased cost of production in China itself, which would make a silk shipment worth 100,000 Hongkong dollars, three years ago, worth many more now. In spite of the fact that Americans are now paying more than twice as much for Chinese articles as formerly, our imports of silks, etc., have fallen off very little.



The Existing Commercial Pacific Cable Across the Pacific

China's Great North-West

IV.—Historic Ninghsia and Camels

By Rodney Gilbert

NINGHSIA is one of those frontier trading towns in which the traveller never seems to encounter a native. Innkeepers, shop-keepers, restaurant proprietors, soldiers, police and officials are all outsiders, and where the natives keep themselves it is difficult to determine. The city lies in absolutely flat country intersected by many irrigation ditches and is well cultivated in rice and hemp. It is about forty *li* from the Yellow River and between fifty and sixty *li* from the Alashan Mountains. As it stands it is not an ancient place, but it is so dilapidated and ruins are so numerous in the big spaces which were swept bare during the Tung Chih Moslem rebellion that it has an ancient aspect. The city has one exceedingly busy street, wide and dusty, which does not boast a single first class shop but which is always crowded with stands and with goods heaped up upon the ground, the property of itinerant traders. A massive drum tower upon which have been erected a group of small temples dedicated to the warden of the under-world is the only imposing building in the city. The greater part of the space between the walls is taken up with big stretches of bare ground crusted with white alkali and dotted with crumbling ruins or with duck ponds which become a wilderness of weeds in the late summer and autumn. All the temples and yamêns are dilapidated with the exception of the group of buildings which General Ma Fu-hsiang, Defence Commissioner, has renovated and uses as his residence and offices. In its palmier days Ninghsia, like Peking and Hsianfu, was the residence of two hsien magistrates. For several generations it has ceased to deserve such distinctions, however, and one has been removed to the Manchu city formerly occupied by a Manchu garrison, which lies fifteen *li* west of the trading town.

MA FU-HSIANG
Ninghsia Defense Commissioner

One would not suspect in travelling through northern Kansu that it is a volcanic country, but Chinese history records many violent earthquakes in the Ninghsia district which have been terribly destructive of property and life, while several days' journey south of Ninghsia along the Yellow River, the Chinese speak of smoking mountains from which they see fire issue and from which there are occasional slight eruptions. Ninghsia has been built on several sites and seems to have been removed from place to place after destructive earthquakes. The last violent shock is said to have destroyed the city in the 26th year of Chien Lung. Thanks to much irrigation and the alkaline quality of the soil, stone monuments seem to rot away like wood, and there are few written records of the ancient history of the Kingdom of Hsia in existence. On the occasion of the arrival of two missionaries from Lanchowfu during my stay in Ninghsia, we visited a little room in a ruined tower and found a group of venerable scholars rewriting the history of the Ninghsia district from official records. They told us that so far as they knew, there was not a single monument in all the territory inscribed with the peculiar characters which the Kings of Hsia invented for their people several centuries before the rise of the Mongols, and which were in common use until Chinghiz Khan obliterated the kingdom and did away with its independence forever. It is sometimes said that one of the scripts which are preserved in the archway at Chuyangkuan, in the Nankow Pass, north of Peking, is that of Hsia.

The people are not of Chinese origin but were originally a Tibetan border tribe of the race described by medieval travellers as Tangut, who were given permission by the Tang dynasty emperor Tai Sung to settle in the Ninghsia district. The family name of the emperors of the Tang dynasty was Li, and in return for services rendered, it was the fashion among some of the Tang rulers to adopt tribal chieftans of the various barbarians into their family and to bestow upon them the family name of Li. During certain insurrections the Chiefs of Hsia were of some service to the Imperial House, and together with the clan chieftans of some Turkish tribes in the Kueihuacheng district, they were allowed to adopt the family name Li. From the time of the fall of the Tang dynasty, the Hsia Kingdom became virtually independent and resisted all attempts of the Sung, the Liao and the Chin emperors to make northern Kansu a part of their Imperial domains. For a time they paid tribute to both the Liao Tartars and the Chinese, but very early in the 11th century they became so important, having by this time driven the Ouigur out of North-western Kansu, and having invaded northern Shensi and Shansi, that the Chinese were glad to purchase their friendship with large annual presents of silver and silk. The system of writing which has been quite a puzzle to philologists was adopted in the first half of the 11th century and was probably founded upon that in use among the Khitan, who had presumably built their script upon a Chinese model. A key to the mysteries of the language, together with some manuscripts, were discovered by General Kozlov in Chinese Turkestan, and as one of the inscriptions in the Nankow Pass is simply the phonetic rendering of the Sanscrit text in Hsia characters, it has been of assistance in learning the pronunciation of these ideographs. Professor Berthold Laufer after some study of the few materials available, has determined to his own satisfaction that the language belongs to the Tibetan-Burmese group and is rather closely related to Lolo. Several residents of Ninghsia told me at different times that in the hills on both sides of the river there still reside some aboriginal people who speak a non-Chinese language, but all the mountaineers whom I later encountered spoke nothing but rustic Chinese, with a smattering of Mongol which they had acquired from their neighbors in the Alashan.

Marco Polo visited Ninghsia and undoubtedly found it sixty *li* to the west at the foot of the hills and at the mouth of the pass through which the present road from Ninghsia to the home of the Prince of the Alashan runs. He calls it Egrigaia, and mentions that a cloth of camels-hair was manufactured there

which was highly esteemed as an article of commerce. At the time of his visit, the place was probably much Mongolized, for Chinghiz Khan had sacked it twice and had occupied the pass with a large army for five months at one time. The Ordos Mongols still refer to Ninghsia as Irge, which may be a modification of the name which Marco Polo heard. He also mentions the Alashan under the disguise of Calachan. While the Alashan Mountains and district are colloquially pronounced as we render them in English, the literary Chinese rendering is Holanshan. This is probably similar to some original which began with a Kh, a sound which the Chinese always render as h and which Polo always hears as k.

As I have already said, one sees very little of the native of the Ninghsia district while travelling through. Within the city the merchants and inn-keepers are nearly all Shansi men, while outside the city the more enterprising farmers, boatmen and camel owners all seem to be Mohammedans. The Ninghsia Mohammedans, nearly all travellers agree, are an extremely likable class of people, honest, good-hearted and peacefully inclined and quite willing to live and work on good terms with their Chinese neighbors. Their kindred a little further south and east of the Yellow River do not have nearly so good a reputation and from among them were recruited the majority of Tung Fu-hsiang's followers who gave the strongest support to the Boxers in Peking in their attack upon the Legations in 1900.

Two days' journey into this little travelled country is the home of Tung Fu-hsiang himself. This famous commander who went unpunished after his act of participation in the Boxer movement, retired to his home in 1900 and died there six years later. His wife, who is a Turki of Kashgar, is still living and still maintains a strong military following, while one of his sons, a man of doubtful repute, is a minor military official at Kuyuan. After the Boxer trouble another famous promoter of that movement, who was almost entirely responsible for bringing the Imperial Manchu Court in league with the Boxers, Prince Tuan, also came into the Ninghsia district and was sheltered and protected by the Prince of the Alashan, Wang Yeh-fu. General Ma Fu-hsiang, Defence Commissioner at Ninghsia, who is now second to the military Governor of the Province in rank, is himself a Mohammedan of a very liberal turn of mind and with an excellent reputation for maintaining a just and benevolent administration. Unlike most Mohammedan military leaders of Western China, Ma Fu-hsiang has a good Chinese education and has travelled throughout the Eastern provinces. His elder brother was a cavalry commander in Tung Fu-hsiang's army, and as a boy Ma Fu-hsiang came to the Court in Peking and became a marked favorite of the Empress Dowager. He afterwards accompanied her to Hsianfu when the Court took flight and owed some of his subsequent advancement to the good impression which he made during this journey. General Ma is a native of the strong Mohammedan centre of Hochow, two days' journey southwest of Lanchowfu, where for some generations the favorite subject of gossip among the Moslems has been that of rebellion against the Chinese and the slaughter of the infidel. General Ma is the senior member of a new Mohammedan school in Kansu which discountenances all this talk of rebellion and slaughter and which seeks to advance Mohammedan interests by educating their people up to participation in Chinese official matters so that their share in the government in strong Mohammedan communities will be greater and so that they will not out of religious fanataticism confine their studies to the Arabic Koran and remain illiterate so far as their ability to do Chinese commercial or official business is concerned in Chinese communities.

My business in Kansu had to do with the war and when I arrived in Ninghsia on November 1st, I looked forward to a long stay. I had no reason to expect that a cablegram would arrive on the 12th which would rob me of my principal excuse for travelling in West China. I made up my mind upon my arrival, therefore, to dispose of my camels sooner or later, and, since I could not promise steady employment to my retainer Ting he was in haste to return to his home to join his brother in the direction of a wool caravan which was scheduled to return to Paotou. I let him go, therefore, with some regret at the time and with much deeper regret later on.

Ninghsia is a city of miserable inns, and on the day of my arrival, thinking that I deserved some comfort in compensation for a wintry trip across the Ordos, I visited a number of tumble-down taverns and refused to stay in any of them until at last in the horse market I met a Chinese who volunteered the information that another foreigner, an Englishman, an agent of the Jen Chi Yang Hang, interested in wool buying, was living in the Kuang Mao Chan. I, therefore, went to this inn which proved later to be the only decent shelter afforded the wayfarer in Ninghsia, found myself a room, borrowed a good sized tub, and was in the act of removing several weeks' accumulation of Mongolian dust and alkali, from my person, when Mr. Candlin, of Forbes & Co., whom I had once met in Peking, and whom I knew exceedingly well by repute, burst in upon me and insisted upon having me share with him the larger and better quarters which he had already secured. I have met many foreigners in the interior, living in semi-Chinese fashion, but I have never known anyone who has succeeded in adapting himself so thoroughly to the Chinese language, Chinese customs and Chinese methods of living as this Mr. Candlin. He is the only man I have ever seen in China who seems to meet the Chinese and live with them on terms which entail no self-consciousness or restraint on either hand. This is something which the average foreigner fluent in Chinese may achieve after years of acquaintance with one or two families, but which no other foreigner whom I have known experiences in his general intercourse with the Chinese people. I have often noticed that other Orientals, seemingly as foreign to the Chinese as we Occidentals are, contrive to be thoroughly at ease in all Chinese circles. The Turki of Turkestan, for instance, who have been long resident in China, arrive at a degree of intimacy with the Chinese whom they meet which no foreigner can hope to rival, although to all apparent intents the Turki are as foreign in appearance, language, customs and religious tenets as we Occidentals are.

Having dispensed with my camel driver, the care of my two animals now devolved upon me. The stable boys in the inn were ready to take care of horses, mules and donkeys but were frankly ignorant of the ways of camels. Although I had been only a few weeks with the animals and had been no more than a witness of their care and management, I was the superior of all in the inn in the matter of camel lore. It, therefore, became my province to prescribe their food and care. I had been frequently told that all one had to do was to throw hay on the ground in front of them and see that they got water every few days and that they would do very well for themselves. I soon learned, however, that a camel is a more intricate mechanism than most people suppose, and while the man with expert knowledge may seem to do no more for them than the amateur, for the one they will fatten and thrive with erect and sturdy humps, while for the other they will droop and wilt and draw so largely upon the fat of the humps for sustenance that a few weeks mis-management will undo all the good of a summer's grazing.

The Gentle Art of Dealing with Camels

Although many thousands of camels are owned in the Ninghsia district there are no camel inns in the city itself, and it is very difficult to find anyone who is competent to give advice about the care of such animals. It was only a few days before I was conscious that my two animals, which were both comparatively young and were in perfect condition when I arrived at Ninghsia, were going into a decline. I experimented with several kinds of hay and straw, trying freshly cut swamp grass, millet straw of which all ponies are very fond, and wheat straw, but none of them seemed to appeal strongly to the camels. They refused to drink, moreover, and at the end of a week their humps had become noticeably flabby and were falling over to one side or the other. In the Ordos we had travelled hard and had left them entirely to their own devices in the matter of food, and yet they had been as fresh and as fat at the end of the journey as at the beginning. I set out at once to find a camel driver whom I could employ to take care of the animals but it was a vain search. A few Chinese knew that they should be fed salt and water-soaked peas while in civilization. In Ninghsia I could not get the peas, however, so resorted to small black beans with a good allowance of salt mixed in them, but this the camels refused to touch. I made a nose-bag

and tied it on the younger of the two but she only sputtered and spit great quantities of half digested green grass into it, and roared so loudly under the indignity of having her nose encased in a bag, that I finally had to take it off. I learned later that black beans are as acceptable to camels as peas, but that a camel which has never been in Chinese hands but has always enjoyed the independence of the Mongolian grass lands has to be properly introduced to any such diet. The animal is made to kneel, ropes are passed over its knees and the thighs are lashed to the shins so that it cannot rise. The caretaker then takes hold of the wooden pin through the animal's nose, tilts its head back until it opens its mouth wide, emitting shrill screams of terror, and proceeds to thrust large handfuls of salt and beans down the animal's throat. Most of this is at first ejected in violent blasts but a certain amount clings, and when the animal begins his rumination, there are enough beans left in his mouth and throat to give him the taste of them which he thoroughly relishes so that the next time he retains most of what is forced upon him and eventually learns to eat on his own account. When a lot of them are together, this violent initiation is not always necessary for the young camels seeing the older ones munching away with apparent relish, will nose about a large basket of water-soaked beans and salt, nibbling at the mess for a while and finally eat of their own accord.

I do not think that any European who has to do with camels ever fully exhausts his interest in the animals. Even after I had travelled with them many days' journey and had become thoroughly familiar with all their strange tastes and antics, I could never divest myself of the feeling that I was travelling with the circus. A camel is always awkward and ungainly alone, but a string of camels can be very majestic and when one is travelling with hundreds of them and sees the long line stepping and rocking in unison, in perfect harmony with the clang of their bells, they have a barbaric splendor and majesty which makes the strongest possible appeal to the imagination. Riding a pony through vast desert expanses may become exceedingly monotonous, but with a string of camels in the great alkali wastes, the imaginative person is always conscious of the fact that he is part of an exceedingly picturesque cortege. This does not apply to foreigners alone, for while the life in the wilderness may make somewhat less of an appeal to the Chinese imagination, there can be no denying that it does fascinate even the oldest camel driver. One might think that they would come in time to regard all this trekking across the waste places a matter of routine, but they have told me that it is otherwise. They talk with great enthusiasm of the life, compare themselves with the unfortunate people who must sleep under roofs on hot *k'angs* in dingy inns, and dilate in more or less poetical diction on the joys of living in the open, of sleeping under the stars, of camping where they will and moving when they feel inclined. The freedom of their life appeals strongly to them and makes them exceedingly independent and courageous, while the health that it gives them is fully appreciated and they are rather boastful of their superior endurance.

The two-humped camel is probably indigenous to Central Asia. It is called the Bactrian camel, probably because the Greeks first laid eyes upon this variety in Alexander's Bactrian kingdom in Asia. Travellers in Turkestan sometimes encounter wild two-humped camels in the Taklamakan Desert and zoologists are not quite agreed as to whether these are native camels in the wild state, or domestic camels run wild. Because camels are associated with such semi-tropical countries as Syria, Arabia and Egypt, they are usually regarded in the Occident as tropical animals, and the average tourist who visits Peking is much astonished to find camels not only weathering the severe winter, but exceedingly comfortable in a coat as heavy as that of the Arctic bear. They will lie placidly throughout the coldest night in Mongolia chewing their cuds and facing terrific winds, with a temperature which can only be rivalled by the excessive frosts of Alaska and Northern Siberia. To changes in the weather they are, however, susceptible. Camels reared in the comparatively temperate climate of North China begin to lose their hair early in the spring and at the beginning of summer are completely naked and are pathetically scrawny objects. The camel's fat all goes to his humps and he is never heavily built but with his winter fur he looks like a very sturdy and stalwart animal. The carrying camel has exhausted most of his reserve store of fat by spring and then when he loses his hair, he seems mere bones and parchment and excites the pity of everyone who is not accustomed to his habit of shedding his coat. It takes some weeks for the new pubescent crop of wool to be visible and during this period a cold wind may work great havoc in a string of naked beasts. As this is the season at which the females usually give birth, both they and their offspring have to be mid-wived with the greatest possible care, and one often sees the mothers and their weak-kneed children who are often so delicate that they cannot stand upon their own legs, swathed in many layers of sacking and even done up in sheepskins to protect them from changes in the weather and the cold night winds. The Chinese and the Mongols say that the proper period of gestation for a camel is one year under perfectly normal conditions, but that when the female has been worked throughout the period, it often requires as long as sixteen months between the time of conception and birth. Birth with the female camel is a more serious ordeal than for most other animals. The expectant mother becomes exceedingly restless and irritable when she becomes conscious of the fact that she is about to bring forth, and the nomads of Asia, Mongols, Turki and others, are in the habit of watching these symptoms closely and when the time approaches, they tether the female or put guards upon their herds. In Mongolian country one frequently sees camp-fires in the open where the camels are grazing in the spring, with horses ready saddled. This precaution is taken because when the first pangs of birth commence, the female will, unless tethered, bolt away from the herd and run at top speed until her offspring is born. If a camel gets away, it devolves upon all the herdsmen interested to pursue her on horseback, following the trail as best they can, for in spite of her burden, she can outrun the fastest horse, to find her and her calf when it is born, and to bring them back to the fold.

The camel is naturally a pacing animal, that is the right hind leg moves with the right foreleg. Trotting camels are, however, not uncommon. At a walk the camel picks up all four feet separately. If it steps out with the right foreleg, the right hindleg follows, then the left foreleg and last of all the left hindleg. The forefeet which are always larger than the hindfeet, are lifted high in the air, but the hindfeet simply slide along the ground and upon rough surfaces the camel is liable to stumble with his hindfeet but never with his forefeet. The broad pads, as everyone knows, do splendid service in the desert but on hard surfaces they soon become tender and in mud or upon ice the camel is not at all surefooted and is inclined to be panicky when his long legs start going in all directions. When his pads get completely beyond control upon an icy surface, he will sometimes become desperate and throw himself upon his side to settle the matter. During long journeys over hard, gravelly soil, the pads frequently wear thin, are bruised by pebbles and become tender and swollen. The camel driver first doctors these by bleeding the pad. A spear shaped lance is thrust into the foot between the pad and the hairy part of the hoof. A few drops of blood are squeezed out and the swelling almost immediately subsides. If the irritation is very bad, however, leather pads are stitched to the callouses with rawhide thongs and the camel goes shod until his feet have healed.

Unlike most beasts of burden the camel is an extremely talkative quadruped and has some comment to make upon everything that is done to him or about him. The variety of sounds that he can make astonishes even experienced drivers at times, and one has to be with camels a long time to know what each particular squeal, grunt or bellow means. Nothing excites them to such a versatile performance as any trifling with their feet. The unearthly screams and groans emitted by a camel who has been carefully bound and whose pads are being either lanced or reinforced with leather soles, would deter anyone from going on with the operation who was not thoroughly familiar with their complaining temper. Next to trifling with their feet in their catalogue of dislikes, is trifling with the wooden pin through their noses. If one is very tactful with a camel which he constantly tends, he can take hold of the nose rope or of the pin itself without eliciting any protest, but the camel that has had many masters and some rough treatment will distend its neck to the utmost and adroitly dodge every effort to get hold of either the rope or the pin, squealing frantically all the while.

These pins are usually cut from tough desert roots with a knob on one end and a leather button on the other. The young camels have their noses punched when they are about two years old.

It is not a difficult or an elaborate process for the division between the nostrils is a mere parchment, but the memory of this operation never leaves them and when a new pin has to be adjusted. there is always a struggle and a terrific outcry. The moisture in the nose softens the pin and the camel can frequently pull hard enough on the rope without pain to himself to snap it. He then goes wandering off exultant in his freedom and defies the whole world to catch him. At such a time no one but the immediate master of the beast can get anywhere near him and even he can exercise no authority until he has got the renegade by the long beard under his throat.

When a camel for any reason decides to move in a hurry, he displays remarkable speed and can easily outrun a horse. The older camels prefer to move at a majestic walk which looks very slow until one observes how fast the legs of the man who is leading the string are moving. The length of the camel's stride makes up for his deliberate gait. It is not hard to persuade a young camel to go at a very fast pace, and in many parts of Mongolia where camels are cheaper than horses, the Mongols habitually ride young camels, and make remarkable journeys on them.

Imperial Couriers in Mongolia formerly rode fast camels and are said to have done as much as a hundred miles on one animal in a day by practising peculiar cruelties upon their mounts. A string of camels loaded to their utmost carrying capacity average only about twenty miles a day, but lightly loaded they will easily travel thirty-five miles a day over long journeys. The conventional camel load throughout China is three hundred catties, or four hundred pounds, but in practice some animals will, of course, carry much greater burdens with ease. It is the practice in many districts to use a stallion camel as the leader of each string, chiefly because they are more sedate and show more sense of responsibility. Whether they are lead or not, they will follow a trail and will not stop to graze by the wayside, so that they do not require either leading or urging. Many of these animals are enormously strong, and will carry almost five hundred catties, in addition to the tent, water-jars, brooms, and other impedimenta of the camp.

In camel-drivers' parlance, camels are not counted in tens and hundreds, but in twelves and sixties. The unit of twelve is called a *tsao*, and is theoretically the number that can eat from one pile of hay. The unit of sixty is called a *fang*, and is the number that goes with each tent in an encampment. The number of camels in a string varies greatly, but probably averages about nine. In an emergency, one man can lead and take care of as many as fourteen, but this is not considered sound practice, and is not an economy.

The camel's peculiar adaptability to desert life is well known. He not only can live in the desert and eat coarse desert plants, but he is much happier and healthier there than in other environments. Coarse desert grasses, thistles, woody little plants bristling with thorns, sage, evil smelling artemesia and tough little evergreen shrubs—all of which are poison to other quadrupeds, the camel eats with the greatest relish, and with the best possible results to his inner anatomy. When one arrives with camels in pleasant, well watered valleys, with great stretches of rich meadow-land, one would expect the camel to cavort about and enjoy himself, but he does nothing of the sort. He sniffs at the water, drinks a little if he has had nothing to drink for several days, nibbles delicately at the grass, and begins to pine, hankering after the weeds of his native desert. The camel-drivers explain that there is a certain amount of various minerals in every desert plant, and that it is the alkali flavor and the alkali tonic which the camel's taste and system both require.

Camel Characteristics

In every country in which camels are raised and used, they have an evil reputation, and are denounced as ill-tempered, stubborn, and slow-witted beasts. The men who are associated with camels are also the objects of suspicion on the part of their fellows. Through living much in the wilderness, and through leading a life very foreign to that of the cities, they become independent, but shy, somewhat taciturn and very suspicious of the tricks and subtleties of townspeople. Anyone who has lived in the wilderness with camels and camel-drivers, will be convinced that both are much maligned. The camel is a very conservative animal, hard to know and slow in friendship. He resents vigorously any attempt on the part of a stranger to get familiar with him, and if one takes the nose rope of a strange camel in his hand, he is almost sure to be greeted with a hostile scream and a shower of offensive green filth which the animal brings up from one of his numerous stomachs.

When a camel comes to recognize one as a friend, however, he is more demonstrative than a horse. He will come to meet you wherever he sees you, put his nose over your head and croak and sputter with delight. He knows the peevish man who jerks his nose rope, and he also knows the man who taxes it gently and who never pulls hard upon it, and in these matters, the camel's memory is remarkable. He will recognize a friend after many months' separation, and will trot up and greet his old acquaintance with much fervor. The younger of my two camels was so willing to please, after we had been several months together, that she would kneel down to be loaded without any suggestion from me, and when I wished to ride, she would remain kneeling until I had adjusted myself, watching me all the while, and when she thought that my seat was firm, and had seen me take a grip on the ropes of the pack, she would rise and start off of her own accord.

The first time that a camel rises or kneels under an amateur rider, the sensation is a peculiar one. In either case, it consists of three distinct and violent lurches, and unless the beginner has a firm hold, he is bound to roll off, either forwards or backwards. The effect of the camel's peculiar motion is exaggerated. I have never yet met a Chinese or other Oriental who complained of sea-sickness from camel riding, though everyone agrees that at first it is very hard upon the back, and that until the skin is hardened, the amateur is more badly chafed and sorer after a ride than he would be on a horse, no matter how rough his gait. Anyone who wishes to become familiar with a camel should not attempt to stroke his face or nose, as this is only tolerated after long intimacy, but should try to scratch him behind the ears, or on the throat. This will be resented at first, but is really much appreciated and breaks the animal of the habit of putting his head beyond reach every time a hand is raised.

The way to get on the good side of the camel-drivers is to be enthusiastically interested in their mode of life, and to seem to enjoy it. The winds of the Mongolian deserts are like gales in the Arctic, and when the thermometer shows thirty below zero, and a stiff north wind is ruffling the fur on the camels' throats, a well pitched tent of two thicknesses of canvas with a fire going inside, is a very acceptable shelter. Now if one is inclined to be received into the camel-drivers' fraternity, and to endear himself to his hard fisted fellow travellers, he has only to announce on such a night that the air in the tent is too hot and close for him, and that he prefers to sleep outside on the ground. This is a big price to pay for popularity, but the results are sure. The seasoned camel-driver will eschew the tent in the bitterest weather, make up his bed of felts, quilts and furs on the open plain, and remove all of his clothes as he squirms into it, piling the garments on top of him as he takes them off.

Caravan Equipment

When a camel caravan sets out into the desert, the stock of food, tools, and the like, must of course be sufficient for all needs and all emergencies, because nothing can be purchased on the way, and it might in some instances be almost fatal to count upon meeting other caravans and borrowing from them. A shelter and a fire are, of course, the first essentials.

The camel driver's tent in the northwest is built on the Manchu military model. There are three poles, two uprights about seven feet long, with an iron ring at the top of each, and a roof-tree about four feet long, the ends of which fit into the iron rings on the uprights. This construction would lead one to believe that the bottom of the tent should be rectangular, but the bottom is a perfect circle about fourteen feet in

diameter. The tent-makers have worked out their patterns so long ago that no one knows how the original designer of this shape of tent made his angles and curves coincide, but the novice who attempts to cut out a tent along these lines will find himself involved in trigonometry before he is well started, and is almost certain, after focussing all his rusty mathematics upon the problem, to create something which sags at every angle and wrinkles at every curve, while the professional tent-maker can lay the whole thing out in half-an-hour by rule of thumb and careless measurements with his pipe stem, and create a tent, which when pitched is as taut and smooth as an inflated balloon. Three poles, a single piece of canvas, and eight or ten iron pins to fasten down the hem, constitute a perfect house for six or eight men, which can be pitched by two men in one minute, and which will weather the most violent gale. Any kind of a tent which presents a perpendicular, flat surface to the Mongolian winds, is utterly useless.

In Ninghsia there are no tent-makers and no camel-drivers to give advice. I had the measurements of a camel-drivers' tent. I bought all the materials, employed a tailor and sat over him while he followed my directions. The result was a matter of wonder and scorn to every human being, Chinese or Mongol, whom I subsequently encountered in the waste places. It was made of better material than most tents are, but the first breeze that blew over it ripped holes in it, through which one could pitch a sack of flour, and the rope loops that were meant to fasten it down, were all at the wrong corners and drew the shelter into such weird shapes that the lightest fall of snow or rain found ample pockets in which to collect moisture and ooze it on to the heads of the occupants. When the professional camel-driver pitches his tent, it springs from the ground before the packs of the camels are removed, and by the time that the animals have wandered off to their grazing, a trench has been dug around it, a wall of earth has been thrown up about the skirts of the tent to keep out the wind, and a warm fire is blazing inside, with a kettle of water sizzling upon it.

The camel-driver's stove is simply a support for the pot. It consists of four upright rods of iron, rivetted to a series of six or eight hoops of iron which keep the fire together. It is like the hooping of a well-bound barrel, without the staves. The land produces the fuel, which may be either dried shrubs, or the sun-dried manure of the summer herds of cattle and camels. Every camel driver carries flint and steel, but in these unregenerate days, he also tucks a box of Japanese matches into his bosom and uses them to kindle his fires as long as he can keep them dry, to save himself the trouble of trying to get a light from tinder with benumbed fingers.

The equipment of a caravan, apart from the tent and stove already described, is limited, but adapted to all needs. Each man carries, in addition to his flint and steel, his own knife and chopsticks, several sizes of needles for sewing, a packing needle for sewing felt and mending camel saddles, an abundance of coarse cotton yarn, bits of rawhide for stitching, and odd patches of leather which always come in handy, and an antelope horn for punching holes, splicing rope, and opening hard knots. As common property, they carry a boiler for cooking food, tall, narrow sheet-iron pots for brewing tea, spades for trench digging, hatchets for cutting fuel and pounding tent-pegs, a bread-board, a big meat knife, an earthenware bowl for making dough, a stiff broom for sweeping the camels (camels are swept and not curried), copper bottles of about three gallons capacity for water, and bottle-shaped wicker baskets for meat. In addition to these, all sizes and styles of bags and sacks are carried, and are never adequate for the supplies of flour, fuel, ice and salt, which the drivers think it necessary to carry.

The camel-driver's staple food is a noodle preparation known all over China as *mien.* They also carry quantities of bread, baked with mutton fat to keep it soft and fresh, and sacks of perched millet and parched barley flour, which can be made into a porridge, with the addition of hot tea. Mutton is the staple meat food and is usually cooked with the noodles. Onions. and sometimes a few potatoes, are carried to flavor the limited number of dishes which can be prepared. Vinegar is a luxury, and pepper and sesame oil are ultra-luxurious adjuncts to the larder. Nearly every caravan has one or two muzzle-loading rifles, which are fired off at night to scare wolves and thieves. With these an occasional rabbit or antelope is bagged, and such an addition to the routine menu is much appreciated.

The routine life of the caravan is easily described. Camels are gregarious, and when the drivers start out after them in the afternoon, they are usually found in a group, making the best of the scant desert herbiage. They are brought in at, say, four o'clock in the afternoon, and are made to kneel, each between his packs. Camp is struck, the animals are loaded with an amazing amount of abuse and profanity, but with surprisingly little rough treatment, and the long column starts off, headed by the man who is most familiar with the particular desert trail that is being travelled, and advances on its way just as the sun is setting. Every ten *li*, there is a halt. The first string stops at the side of the road, the next lines up beside it, and as the last string comes in, the first starts out again. When three or four hundred camels are travelling together, this gives the leading string a halt of perhaps five minutes; the greater the number, the longer the halt. The length of the journey is always dictated by the availability of water and grass. As a rule the end comes about three in the morning. The leader of the first string comes to a well or a spring and stops. All the others draw up beside him, the animals are made to kneel and the loads are taken off as quickly as possible. The pack-saddles are roped tight, and the animals are turned loose to hunt their own food. By the time they have all strolled off, the tents are pitched and fires going, and in each tent ten or a dozen men are sitting cross-legged around their fires, talking of everything in the world, but world affairs, the peculiar gossip of the desert dwellers. In the morning each man gets out his needle, mends his clothes, mends the camel-saddles, plats camel-hair into ropes and belts, and finally does his share in the preparation of a morning meal. There is usually a professional entertainer among them, who is either a philosopher or a story-teller, and who, by way of compensation for natural indolence and disinclination to work, exercises his superior wit in the diversion of his fellows.

Morgan & Co.'s New Partners

Junius Spencer Morgan, Jr.; Elliot Cowden Bacon and George Whitney have been admitted as partners in all of the Morgan firms.

These firms are J. P. Morgan & Co., New York; Drexel & Co., Philadelphia; Morgan, Grenfell & Co., London, and Morgan, Harjes & Co., Paris.

Junius Spencer Morgan, Jr., is a son of J. P. Morgan, senior member of the Morgan firms. He was graduated from Harvard in 1914 and joined the staff of Morgans there in the following year. During the war he served as a lieutenant in the navy, seeing service on a destroyer at Queenstown and London. He is twenty-seven years old.

Mr. Bacon is a son of a former partner in Morgans, Robert Bacon. He is thirty-one years old. He was graduated from Harvard in 1910 and joined the staff of the Morgan firm there in 1914. He served as a captain of field artillery with the 304th Regiment of the Seventy-seventh Division during the war, seeing active service in France.

George Whitney is thirty-four years old and a nephew of a former Morgan partner, Edward F. Whitney. He was graduated from Harvard in 1907 and joined the Morgan staff in 1915. He was undergoing training as an artillery officer when the armistice was signed. Mr. Whitney accompanied Thomas W. Lamont, of the Morgan firm, to Europe when the latter acted as financial adviser to the American peace delegation.

All of the new members of J. P. Morgan & Co. are married and all have children. They bring the total membership of the firm up to fifteen. This includes all of the four branches of the house.

The So-called Student Movement

By Gerve Baronti

The Chinese students and the commercial class of China are welded together for the purpose of furthering the boycott on Japanese commodities. The student movement as it is called, has an intellectual substratum and a surface of patriotism. Like most youthful movements it lacks systematic methods. However, if properly organized, considering its strong points, grit, doggedness and determination, it could be the greatest force in China for the exposition of Japanese camouflage. At present it is working against great odds and must, with its inadequate programme, interfere with communications and commerce, which are exempt from the boycott. The Shantung question has raised havoc in China, and no amicable adjustment for the near future is anywhere evidenced. The students continuously clash with the authorities and it is reported that they have been attending school at Peking under the surveillance of the soldiers and the police. The Government has demanded through the Ministry of Education that two student leaders be dismissed from the Peking Government University so they may be punished for some "heinous crime." This seems a foolish procedure, for instead of alarming the other students it may incite them to further riot. The Japanese Minister to China has sent a despatch to the Ministry of Foreign Affairs couched in most severe terms threatening that Japan may find it necessary to adopt drastic measures to protect her people and commerce. The students have been delivering lectures on the streets and in the parks recently. They choose as their subjects the Shantung question and the recent arbitrary action of the officials against the students at Tientsin. The other day while lecturing in the busy quarters outside the Chienmen, at Peking, they were surrounded by armed police. In most cases they objected to arrest and refused to leave the place.

There is much against this movement as there is much against any new movement which strikes for liberation of the oppressed. It is to be hoped that adequate organization will straighten things out for it in the near future and allow it to develop sanely if it is to be reckoned with politically. Perhaps a students' convention held in one of the large cities where plans could be proposed and arranged might be a start in the right direction. Certain able students from each university and several students from each of the classes of the higher schools might be chosen as delegates, in which case permanent executive headquarters should be established and the future campaign decided upon should be definitely made known.

On the other hand many think there is danger of an untrained movement becoming a political instrument in the hands of certain unscrupulous leaders. In a country where political unrest is rampant this is a serious question. If this embryonic movement should be recognized as a power the result might be disastrous. If certain unjust claims were made on the Government which by the students were considered just they could refuse in a body to attend their schools and could start riot and rowdyism; causing the Government much temporary and perhaps permanent embarrassment.

The student movement has accomplished much. It has "started something" by arousing China from her lethargy,—it is certainly unable to carry on if there is lack of organization and leadership.

The students will get what they wish in the end. It is inevitable. They are the men of to-morrow. The future affairs of state must be governed by them. How much better they can manage in the future if they will return to their schools and continue their education for the present! They have been joined by their elders, the merchant classes. These classes, because of the advantage of age, and consequent experience, can carry on a movement which might be known as the "People's Movement" much more effectually than the students by themselves. In this case the students, knowing that their ideas would be reconstructed on a sane basis by their elders, could return to their schools, there to absorb as much knowledge as they can get and to plan a future programme which, while it must of necessity be more deliberate, will certainly be more effective for their ultimate desire, which is a complete reform of conditions in the country.

Japanese Mine at Haichow

Mention was made a year ago, says the Haichow (Kiangsu) correspondent of the "North-China Daily News," of the beginnings of an iron mine on the southern slopes of the Haichow mountain, a concession having been granted to the Japanese. The earlier work was clearly of an exploratory nature, consisting of narrow trenches run into the hillside until a depth of 30 or 40 feet was reached. It was generally believed that these explorations were unsatisfactory and that the quantity of iron ore discovered was insufficient to warrant large operations. Later on, however, there was a renewal of interest and there are now about 300 coolies employed. Two large shafts have been sunk to a depth of 60 or 80 feet, the later one being three miles west of the first location. Evidently something has been found to justify further expense, for the work being done is evidently the beginning of an extensive system of mining.

Little can be said positively, but it is now believed that the iron project has been shelved and attention is being paid to other ores that have been discovered in the process. Your correspondent is a bit rusty on his metallurgy and hence is unable to say exactly what has been discovered. The common report among the Chinese is that "electricity" is being mined in paying quantities! Others who have seen bicycle lamps of the familiar pattern say that it is "carbide." My guess is that it is magnesium ore, or phosphorus.

Sprinkled on burning paper it burns readily with a greenish flame, but gives out no odor. Whatever it is, it is certainly being found in large quantities. They are, in addition to the shafts that are being sunk, digging down great quantities of the ore from the sides of the hill, and piling it up in large dumps. There are several Japanese in charge, but active operations are being conducted by Chinese foremen of the familiar type.

Later.—The Japanese mines are being energetically worked. It was reported some days ago that work on the railroad had actually been started but investigation showed that it was only an ore road that the Japanese are building from their mines to the river bank, but whether it is to be for steam traffic or not is not known.

How Influenza Started in China!

Those familiar with Haichow, Kiangsu, would certainly get a shock on entering the city from the East Gate to-day, says the Haichow correspondent of the "North-China Daily News," and would rub their eyes twice to be sure they were seeing straight, for the ancient drumtower, Haichow's one piece of architecture worth the name, has come down.

It consisted of the usual arch spanning the main street, but on top of it was a tasty pagoda of several stories. It is this pagoda that has come down and only the arch remains, like the stump of Dagon.

For several months there has been a most deadly epidemic, possibly influenza, in a decidedly malignant form and some one said that the drum tower was to blame. It was logical enough—there was the drum tower and there was the plague, so down it came. The fact that just as the demolition is being completed the plague is waning is proof positive that the real cause was discovered.

It would certainly seem that, to destroy such an ancient and picturesque monument of the past, a great deal of argument would have been necessary and the highest authorities invoked. But no, nothing of the kind. The man who pointed out the source of the trouble is of no particular standing or learning.

Radio Service on Pacific Extended

Exchange of press despatches and commercial messages by radio between California and the Hawaiian Islands, Guam, the Philippines and Japan on a much more extensive scale has become possible since arrangements recently completed by the Navy Department became effective December 20.

Through the use of modern high power, high speed operating equipment it is estimated that it will be possible to transmit and receive more than 100,000 words a day between Hawaii and the Philippines, 200,000 words a day between San Francisco and San Diego and Hawaii and about a thousand words a day on a slow speed circuit between Hawaii and Japan. The Hawaii-Japan circuit, operating under an arrangement with the Japanese Government, is available only nine hours a day, and due to the necessary use of old type slow speed equipment will be capable of handling but about fifteen words a minute at the inauguration of the service.

Rates on press despatches over the new radio circuits are low, insuring, in the view of officials, a widespread exchange of news between the United States and the Orient and American insular possessions in the Pacific. The rate decided on is six cents a word between California stations and Manila and three cents a word to Hawaii. In the past the navy has been in a position to handle less than 5,000 words for transmission to Hawaii and the Far East daily, due to low power equipment and hand transmission. Exchange of news matter between the United States and the Far East has been dependent on a greatly congested cable heretofore.

The new arrangement, which will be open to routine commercial business, is expected by officials to aid greatly also in the building up of trade by American interests with Hawaii, Guam and the East.

New equipment of the most modern type is now being installed at Honolulu and Manila. The improved system will include a 350 kilowatt loop between San Francisco and Honolulu and a similar loop to the Hawaiian city from San Diego. Both systems, capable of transmitting and receiving messages at the same time, will have a capacity of about seventy-five words a minute each way. Mechanical sending devices, using tape upon which the message to be sent has been punched in dots and dashes and which feeds through the sending key automatically in place of the old style hand sending and photographic receiving systems will be used. Between Honolulu and Guam and Guam and Cavite, Philippine Islands, simliar loops of 100 kilowatt power will be used.

All group stations in the chain will be operated by the central control station method whereby the sending and receiving equipment of any number of stations in a given locality may be operated from a central point. Under the new arrangement but a few hours will be required to transmit lengthy messages from the Philippines to any point in the United States. It is hoped to complete pending negotiations with the Japanese Government for close co-operation between the new Pacific radio system and Japanese stations, thus insuring the efficient exchange of news and commercial messages on a large scale between Japan and China and the United States.

In addition to providing an extremely valuable means of communication between the United States and the islands of the Pacific and the Far East the new system will be a valuable link in the national defence system, naval officers asserted. A great danger in time of peace, they said, was that the radio communication system would disintegrate through its personnel becoming inefficient and its material useless through lack of use. By handling constantly a large volume of traffic daily the system would be kept in the highest state of efficiency at all times, they said, and should necessity arise the personnel would be highly trained and ready for any emergency that might develop.

Privately owned companies in Hawaii and near San Francisco, whose old-fashioned equipment now seriously interferes with communication between the naval stations, also will install new and modern apparatus.

Rich Mine in the Shan States

In view of possible developments in the south-west of Yunnan province on lines similar to those of the Bawdwin mine, across the Yunnan border, in the Northern Shan States of Upper Burma, reference to the latest report of the Burma Corporation, the owners of the property, should be of particular interest. The Bawdwin mine is regarded as one of the richest lead zinc-copper-silver deposits in the world, and is a development of the ancient silver-lead mines and slag-dumps near Lashio, about 50 miles south of the Chinese frontier. The Chinese had been operating on the site for about four centuries, and when they abandoned work about 70 years ago they left many old workings, one of which was a large open-cut, as well as a huge accumulation of slag which still contained large quantities of lead and some silver. The slag was estimated to be about 115,000 tons, and to treat this a lead smelter was erected at Mandalay, but it was later on moved to Namtu, about 12 miles from the mine, where refineries were also erected. Between 1913 and 1915 mining development work was carried on effectively and thereafter mining proceeded actively, the assured ore being estimated on June 30, 1917, at 3,793,000 tons, assaying 27.9 per cent. lead, 20.7 per cent. zinc, 0.5 per cent. copper, and 25.7-oz. silver per ton. At the end of 1918, according to the latest report, the ore reserves were 4,404,000 tons, assaying 24.1-oz. silver per ton, 26.2 per cent. lead and 18.4 per cent. zinc. The total receipts during 1918 were £1,008,244 with operating expenses in Burma at £591,277.

The report for 1918 shows that the amount realized from sales of lead and silver was £913,696, against £739,577 for the previous year, and the total receipts £1,008,244, against £796,227. The operating expenditure in Burma amounted to £591,277 in 1918, against £479,694 in 1917. The amount receivable by the corporation from Burma Mines, Ltd., was £181,480 against £144,108 for the previous year. The work during the year on the Shan lode has developed a fair-sized copper ore-body, high in silver, and the reserves include 283,000 tons of this copper ore, assaying 21.6-oz. silver, 14.2 per cent. lead, 8.7 per cent. zinc, and 10.2 per cent. copper. The tonnage developed during the year amounted to 324,869 tons, a considerable amount when taking into consideration the large footage of driving and cross cutting necessary to connect the Chinese and Shan ore-bodies and to block out the ore. During 1918 the smelter and refinery produced 18,641 tons refined lead and 1,970,614-oz. refined silver.

After discussion with Lawrence Addicks, the consulting engineer, it has been decided that an entirely new and modern lead-smelting plant and reduction works of a capacity to produce 60,000 tons of lead and 5,000,000-oz. of refined silver per year should be erected at Namtu. Plans of the new smelter and refinery are now in progress, and the preliminary steps in connection with the erection of the plant have already been taken. Owing to the careful consideration and investigation necessary on account of the introduction of a new industry to Indian labor and conditions, progress with the Indian zinc smelting works has not been rapid. Plans for a plant to deal with 10,000 tons of spelter and 30,000 tons of sulphuric acid per year have now been got out. The preliminary steps have been taken for the erection of works at Jamshedpur, adjacent to the works of the Tata Iron and Steel Company, the sub-lessors of the site, and tenders are now being invited for the supply of the necessary plant and machinery. Steps are being taken for the formation of a new company in India to take over the Bawdwin mine from Burma Mines, Ltd. The new company will be incorporated under the Indian Companies Acts, and will have a capital of 18,000,000 shares of 10 rupees each, of which 13,531,182 will be issued fully paid to Burma Mines, Limited, as the purchase price, the remainder being held in reserve. These arrangements when carried through will entitle the shareholders in Burma Corporation to receive 14 shares in the Indian company for each share in the corporation.

In the course of his speech the Chairman, Mr. Herbert Guedalla, said that in the newly developed Shan section 283,000 tons of ore had been opened up by January 1, 1919, while to June, 1919, a further 81,000 tons of ore had been opened up, some of which went as high as 20 per cent. in copper. "Apart from the silver, the lead, and the zinc," he asked "is it not possible, or even probable, that we are opening up in this new section one of the largest and richest copper mines in the world?"

New Process Molybdenum-Steel

China's and/or Japan's Opportunity

The invention of a new steel, far in advance of any high-speed steel hitherto made, is ascribed to John Oliver Arnold, professor of metallurgy at Sheffield University the discoverer of vanadium steel. It is unrivaled in hardness, and in tool form will remove a greater weight than any other steel and it possesses comparatively longer life due to the use of molybdenum, instead of tungsten.

If large quantities of molybdenum (a hard, silver-white metallic element) can be found and the price reduced tungsten will take a back seat, because 6 per cent. molybdenum will achieve more than 18 per cent. tungsten.

Professor Arnold is prevented under the defense of the realm act from utilizing his invention industrially. He is patenting his invention in England and America and will be allowed to proceed with his American patent on condition that he publishes nothing concerning it. He is absolutely forbidden to communicate the details of his discovery to anybody in Great Britain except under censorship.

The British government has asked Professor Arnold whether he is willing to hand over his invention to the state, and on what terms. A representative of the American government has made a special journey to Sheffield to investigate the discovery, and agents of the United States are prospecting in America and Europe for deposits of molybdenum, which previously had been found chiefly in Canada.

Since the announcement of the discovery it has been brought to light that Prof. Arnold's formula has been known in the United States for several months, and steel experts hailed it as one of the greatest inventions in years.

For many years American inventors have been experimenting with a new steel process, substituting molybdenum for tungsten, but they have never been able to hit upon the right quantity of the alloy needed. To Prof. Arnold and his associate, Prof. Fred Ibbotson, dean of Sheffield University, therefore, goes the honor of perfecting the process.

The new steel was used by the British in the manufacture of guns and shells during the war. The Germans got wind of the discovery, and it is believed this knowledge enabled them to hold out in the last offensive, as they had run out of tungsten.

For a long time several American steel manufacturers have been using molybdenum steel, but mainly in automobile and airplane parts. The NC-4 had molybdenum steel crankshafts and connecting rods when it crossed the Atlantic. The Fifth Avenue Bus Company is using molybdenum steel springs, while the Renault "baby tank," made in Great Britain for the French Government, carried molybdenum steel armor. It turned aside German high powered bullets.

The only difference in the formula used in England and that used in the United States is in the quantities of molybdenum used. The reason is that England is using the steel chiefly in the manufacture of high speed cutting tools that require to keep their edge when hot, while American manufacturers are mostly engaged in the manufacture of parts that must stand great stress and shock when cold, such as automobile parts.

Dr. Arnold's formula, according to B. F. Phillipson, president of the Climax Molybdenum Co., is composed of the following: Molybdenum, 5.79 per cent.; chromium, 2.79 per cent.; carbon, .75; vanadium, 1.29 and tungsten, none. This makes a steel that is said to be 25 per cent. physically superior to any other steel with 50 to 75 per cent. more dynamic strength. Its chief feature is its uniformity, which enables it to cut longer at a higher rate of speed. As three times as much tungsten as molybdenum is needed, this steel is commercially cheaper. The American formula has less than 1 per cent. molybdenum. American inventors have always thought it necessary to use 15 to 16 per cent. molybdenum in tool steel.

The German formula is somewhat similar to the British, containing: Carbon 75 per cent.; molybdenum, 6 to 8 per cent.; chromiun, 3 per cent., and vanadium one-half of 1 per cent. or none. During the war the Germans imported all their molybdenum from Norway, where are large deposits.

The United States has the largest deposits of molybdenum in the world, chiefly in northern California, Colorado and Oregon. In 1918 Canada produced from her ten mines 220,000 pounds of molybdenum; Mexico; Australia, Japan and Norway a total of 400,000 pounds and the United States 800,000 pounds.

At the office of the Climax Nolybdenum Co., which is associated with the American Metal Co., Ltd., it was learned recently that its flotation mill at Climax, Col., is producing 1,000 tons of molybdenum a day. At that rate it is estimated that the supply from that property alone is good for thirty years.

In the last twenty-four months 100,000 tons of molybdenum steel have been manufactured in Great Britain, mostly on Liberty motors, army tanks, steel helmets, light armor and steel springs. The steel made for war purposes passed ninety-nine and one-half out of 100 tests.

Charles H. Wells, formerly general manager for the Ford Motor Car Co., has been actively interested in fostering the new process in Great Britain, Associated with him have been Dr. George W. Sargent, chief metallurgist for the Crucible Steel Company of America, the United Alloys Steel Corporation and the Carbon Steel Company of Pittsburg.

Book Review

"Old Tartar Trails," by A. S. Kent

Like most books dealing with real people and situations "Old Tartar Trails" by A. S. Kent (North-China Daily News and Herald, Ltd.), is intensely interesting.

Tartar lands and peoples have ever thrown a romantic glamour around the imagination of the West. Frequently it has been inspired by very little—some folk legend, a weird picture —the longing we all have for the distant unknown; or if we have touched the borders of China, perhaps the lure which caught the author of "the irresistable fascination with glimpses of the rough country beyond the Great Wall of China, the sight of a few Mongol horsemen and caravans of camels from Outer Mongolia, the accounts which friends gave me of the great free country to the north and casual acquaintance with the history of the Mongol peoples."

He tells us that "the most agreeable and interesting way of travelling in this country is with camels and horses, using the former for transport of baggage and the latter for riding," but these threaten to be superseded by both motor car and aeroplane.

Like all nomadic peoples the Mongols have a close companionship with animals and regard the horse as a valued friend.

Throughout the book we see crude ugly children at work and at play. They plant their barren soil and harvest their meager crops; they play their simple games on the cold desolate slopes of their hills.

Their moral life is very lax. They have an arrangement much like the primitive order of group marriage. Polyandry is practised and uncleanly habits make for disease.

Religion is taken as "diversion" and an occasional trip to a shrine relieves life of some of its monotony.

There is a chapter on Trade with much that is informative concerning Custom Houses, and Russian Exports to Mongolia, with accompanying lists, etc.

Many photographs taken by the author, showing keen artistic choice, are scattered throughout the book to illustrate his narrative.

Mr. Kent is somewhat influenced by the Russian style. He does not hesitate to use dull flat color when the picture requires it—but he throws it on the canvas with sympathy and understanding. Sometimes we feel a cool purifying breeze blowing off the Steppes he is crossing. He gives us an occasional glimpse of some old monument or carving which the Tartars, like the Mohammedans of India, have put into the Orient. We must thank the men of the desert and the hillmen for dreaming art into the East. The men of the plains have contributed little.

"Old Tartar Trails" should take its place with the more important descriptive books of China.

G. B.

China's Latest Treaty Relations

With the cessation of the European War it is inevitable that China's treaty relations with other states will rapidly increase. For example, before the War the number of states who had negotiated treaties and conventions with the Far Eastern Republic was seventeen; now it is nineteen, if the Central Empires are still included, and it would have been almost two dozen if the negotiations had fructified according to the expectations of their sponsors.

If we neglect China's international relations before the advent of Russia, because the other states were not the equals of the Middle Kingdom, then 1689 is the beginning of the Celestial Empire's treaty intercourse with European states. In that year China and her great northern neighbour concluded their first treaty of peace at the border town of Nerchinsk, and in these modern days of trained diplomats it is interesting to note that China's real negotiators two hundred and thirty years ago were no other than two Catholic priests—namely, Père Gerbillon and Thomas Pereyra, who were appointed by the Chinese Government to accompany its representatives as interpreters to the contracting parties.

At that date the Celestial Empire was still the proud unconquered victor and it was Russia who sued for peace and executed the peace terms. Then came the so-called "Opium War" and the Treaty of Nanking of 1842—"the first 'Treaty of Peace, Friendship and Commerce' to which the sign manual of China had ever been attached on the new footing of equality." China was the vanquished, and since then she has always played the rôle of the "under dog."

The names of other states who were in treaty relations with the Republic before the War as well as their first-treaty years are as follow:—United States, July, 1844; France, October, 1844; Belgium, 1845; Norway and Sweden, 1847; Germany, 1861; Portugal, 1862; Denmark, July, 1863; Holland, October, 1863; Spain, 1864; Italy, 1866; Austria-Hungary, 1869; Japan, 1871; Peru 1874; Brazil, 1881 and Mexico, 1899. In addition Congo Free State also concluded one with China in 1898, but it remained unratified until 1907 when it was annexed by Belgium.

The latest are the following:—China and Chile, February, 1915; China and Switzerland, August 1918. Because of the Russian-instigated movement for the declaration of independence by Outer Mongolia, the tripartite agreement of June 7, 1915, was concluded; since then, as noted in the FAR EASTERN REVIEW of last month, this autonomy has been cancelled and the aforesaid treaty abrogated, primarily as regards China and Outer Mongolia.

Last year Poland and Czecho-Slovakia desired to have similar treaties, but the Chinese Government remained unyielding on the question of any further grant of extraterritorial rights to new states and so the negotiations were suspended. Recently both Greece and Afghanistan are reported to have opened negotiations on the same subject, but in the case of the latter it is understood that the Chinese Government has replied with a Non Possumus, especially as the Chinese Minister in London has advised that Afghanistan, though an independent state, is still preoccupied with numerous controversies with Great Britain, Persia and other states.

Finally, four German delegates, named Wagner, von Borch, Schinemann, and Zischermann, have already sailed for this country to conclude a new Sino-German commercial treaty.

Encouragement for Chinese-made Foreign Goods

Recently the Chinese merchants all over the country petitioned the Peking Government in favor of encouraging native industry, especially machine-made foreign goods, such as soap, candles, matches and seventy other articles. According to the present treaties all exports from China must pay duties at five per cent. *ad valorem.* The petitioners suggest that were native-made goods to be exempted a great impetus would be given to the development of the growing native industry which sorely needs encouragement. Hence they ask that the goods should be exempted not only from such export duties, but also from production, *lo-ti-shui*, consumption and other internal taxes.

In reply the Ministry of Agriculture and Commerce observes that the desired exemption as regards export duties can be granted only in respect of such goods really exported to foreign countries. As regards goods transported from one Chinese port to another—i.e., those engaged in the coastal trade—the present system must still be adhered to, namely, they will still pay half-tariff duties or two and a-half per cent. *ad valorem.* But as regards the *lo-ti-shui*, production, consumption and other internal taxes, the request cannot be granted, inasmuch as the revenue derived from the present available sources of income is already insufficient and will be further diminished should such internal taxes also be exempted.

Thus the exemption will only apply to Chinese goods genuinely intended for foreign exportation, although as the petitioners point out, the Chekiang authorities have actually waived the collection within their province of such internal duties on Chinese machine-made goods, etc. Meanwhile the Government is not insensible to the people's efforts to develop the native industry, as a corollary to the boycott of "low grade goods."' Thus in response to the Hunan tea merchants' petition for two years' exemption from the *likin* tax on the tea trade which, it is pointed out, has suffered grievously from the military depredations of the last few years in that unhappy province, one year's exemption has been granted to tea to be exported to foreign countries.

In addition a special rebate is allowed on the famous *cloisonne* ware manufactured in Peking, on the analogy of machine-made foreign goods.

Lumber in Fukien Province

Some information on the lumber trade at Foochow, in Fukien Province, China, is given by the Commissioner of Customs in his report on the trade of the port during 1918. He says that export of timber continues on the increase, and 1918 saw two new sawmills added to the number in existence. The value of timber exported abroad amounted to Haikwan Tls. 1,154,185. It has been stated on only too reliable evidence that the Foochow heavy lumber trade is finished. A definite limit has been laid down, namely, five years. Even now the cost of transporting lumber to Foochow is bringing profits down to a vanishing point, to such a degree that it will soon be more economical to import from abroad than to employ the local article. Reafforestation is no more than a name. The older trees have practically all disappeared or are too far away from the waterways to admit of their being of any real commercial value. It must be noted, however, that these remarks do not refer to the pole trade, which has every indication of having proper attention paid to it. Fifty years of careful reafforestation would bring Foochow again to the front, but unless the Government undertakes it, certainly there is no private enterprise which would do so, since there is no hope of any immediate return, although the returns when they do come would amply repay the outlay of time and money There was an excellent market for softwood poles and planks at Shanghai and Yangtze ports, owing to the shortage of foreign timber. In consequence, the clearances of junks for these places show a decided increase over the previous year's figures. An element of competition has been introduced into this timber trade passing the Native Customs by the establishment of a branch of the China Import and Export Lumber Company. This firm has built a sawmill at Pagoda Anchorage and is already handling a large percentage of the export trade in softwood planks and poles shipped by junk. After consulting a well-illustrated report made by one of the representatives of this firm it is possible to answer a question that is often put concerning the timber districts, namely, does conservation exist at all or are the forests being gradually devastated? It appears that there is no danger of there being a deficiency at present in Foochow poles. Large areas of land adjacent to the rivers are devoted to the culture of these fir trees, which are planted only 4 or 6-ft. apart. But with regard to large pine and other valuable wood it is a different story. As years pass, they are to be found farther and farther from the river banks, and no provision has been made for reafforestation.

Chinese in Dutch East Indies Want Better Treatment

Time and again the Chinese in the Dutch East Indies have agitated for better treatment; now they have once more come forward with their grievances and asked the Chinese Government to assist them to secure better treatment from the Dutch authorities.

Their first grievance is on the vexatious question of nationality. In the exchange of notes between China and the Netherlands after the signature of the Sino-Dutch consular convention of May 8, 1911, it is provided that whereas Dutch-born Chinese have always been considered as Dutch subjects wherever they went, thenceforth the application of the *jus soli*, or law of domicile, would be restricted to the event of such Dutch-born Chinese remaining under Dutch jurisdiction. On returning to China in the case of Chinese-born, or entering China in the case of Dutch-born, Chinese, the *jus sanguinis* or Chinese nationality of such persons would *ipso facto* revive. If, however, they chose to reside in other countries, they were at liberty to elect their own allegiance. Now the petitioners claim that the above provision in respect of "remaining under Dutch jurisdiction" should be amended so that, like the Chinese born within British territory, they could also choose when they reached the age of majority, whether to remain as Dutch subjects or continue as Chinese citizens.

Secondly, it is contended that the Dutch authorities are not according proper protection to the Chinese residents which now number over 700,000. The Sino-Dutch convention of 1911 provides that as the Chinese consular officers stationed in the Dutch East Indies are commercial agents, they will protect the commerce of their own nationals. This article, it is said, is being construed by the territorial authorities in a very narrow spirit, so that the desired protection is confined only to purely commercial pursuits whereas all other Chinese, such as farmers and laborers, of the latter there are alone eight hundred, are discriminated against and unprotected.

Thirdly, many elementary rights such as equality before the law, etc., are denied the Chinese residents. If any Chinese wishes to be treated favorably, he can take out papers of "assimilation" before the Dutch authorities. The effect of such papers is to make the person in question a quasi-Dutch subject for the purposes of legal protection, etc. But very few Chinese are willing to be so denationalized, although the temptation at times is well-nigh irresistible, and hence the discrimination.

Fourthly and lastly, it is claimed by the petitioners, the Chinese in the Dutch East Indies are not treated fairly. For example, Dutch subjects in China enjoy the rights and privileges accorded to the subjects of the most-favored-nation; but there is no reciprocal favorite treatment for Chinese in the Dutch East Indies and, in fact, the Chinese are rapidly becoming the least favored nationals.

The petitioners, therefore, suggest the speediest revision of existing agreements, etc.

New Steamer Launched at Shanghai

The second British standard ship built by the Shanghai Dock and Engineering Company at their Pootung Yards, Shanghai, was launched on February 7, being christened by Lady Fraser.

The steamer measures 331-ft. 6-in. between perpendiculars, by 46-ft. 6-in. moulded breadth and 25-ft. 6-in. moulded depth to upper deck.

Designed to carry a large general cargo on moderate draft, the vessel embodies all the latest improvements in steel steamship construction based on the experience of practically all the shipbuilders and engineers in Great Britain.

Since the conclusion of the war some rearrangement of essential features was desirable, and the vessel will be fitted with steel lower masts and telescopic top masts to suit the Manchester Canal requirements instead of the war type of folding masts so necessary for evading the submarine observers.

The accommodation for the officers and crew is large and comfortable while the facilities for handling cargo are very complete, including four steam winches on the upper deck, one steam winch with extended ends on bridge deck, and one steam winch on the poop. Two derricks are fitted at each hatch on the main deck, each capable of lifting five tons, and two steel derrick posts on the bridge are fitted with derricks to lift three tons. There are also two derricks on the poop aft. Powerful steam steering gear is fitted at the after end of engine room and hand steering gear aft. A heavy steam windlass is fitted on the forecastle.

The vessel is lighted throughout with electric light, and steam heating in all cabins, and a powerful Marconi wireless equipment will keep those on board in touch with the outer world.

The propelling machinery consists of one set of triple-expansion surface condensing engines, having cylinders 25-in., 41-in. and 68-in. diameter by 45-in. stroke, and fitted with Edward's air pump, usual bilge pumps and feed pumps, all round type steam reversing engine and steam turning engine. Steam is generated in three large cylindrical multitubular boilers fitted with Howden's forced draft and designed for a working pressure of 180 pounds per square inch, all constructed in the Dock Co.'s own workshops.

The auxiliaries include independent centrifugal circulating pump, Weir's type steam feed pumps, feed heater and feed filter, steam ballast pumps, steam sanitary pumps, evaporator capable of supplying 25 tons of fresh water per day, contraflow winch condenser and other fittings incidental to a vessel of this class.

The vessel has been built to Lloyd's highest class under the survey of Mr. Fletcher, their local surveyor, and the Government surveyors, Mr. Rendall and Mr. Williams.

Japan Makes Loan to China

On February 18, after much vain negotiation with the Banking Group in Peking for financial assistance, the Peking Government was obliged by the Japanese bankers with a loan of some Y.9,000,000. The price to the Chinese Government was 96, and the loan was issued against six months treasury bills. The security is the salt revenue from which the loan is to be repaid in monthly instalments, but the proviso appears in the agreement that the loan is to be repaid from the Consortium emergency loan if the latter materializes. Reuter's correspondent at Peking telegraphed on February 19, the day after the loan was signed, that the British, American and French bankers had not received authority to proceed with the consortium loan. He also expresses regret that the Japanese did not consider necessary safeguards regarding expenditure, disbandment of soldiery and peace measures with the South, as were being insisted upon by the other bankers. The loan has caused further dissatisfaction throughout the country, but Peking pleads that it had to have the money to meet the Chinese New Year settlement.

Siberian Trade Impetus

D. T. Magula of the American Committee of Siberian Agricultural Co-operative Unions states that 1920 will be a banner year for American-Siberian business. He reports improvements in the harbor of Vladivostok, together with increased shipping and transportation facilities for American goods.

The Russian Volunteer Fleet, which recently opened offices in San Francisco, has announced that it has four 10,000-ton ships ready for Pacific business. The chief value of this fleet's part in business relations between the two countries will be that it will eliminate the necessity for shipping goods to Japan, and then transhipping them to Vladivostok, or other Siberian ports. At present, the cost of shipping from Japan to Vladivostok is very nearly equal to that of shipping from America to Japan. This is one of the methods adopted by Japan to protect her interest in Siberia.

Siberian business men are glad to learn that the United States has decided to maintain her Railroad Commission in Siberia. The work of Col. Stevens and his associates in protecting and developing the Trans-Siberian Railroad is greatly appreciated.

Mr. Berseneff, who was official commercial representative of the Omsk Government, has returned to Siberia, enthusiastic regarding the possibilities of future business.

Engineering, Financial, Industrial and Commercial News

RAILWAYS

The Changchow-Amoy Railway.—The railway from Amoy to Changchow which is only fifty *li* in length will be extended for a distance of thirty to forty *li* beyond Changchow. The projected extension is under survey, and it is calculated that after the new section is completed, the railway will be able to make a profit of $300,000 a year.

The Kiangsi-Kuangtung Railway.—Japan has long been working hard to obtain the concession for the construction of the railway line between Nanchang and Chiaochow, says the "Peking Daily News." The gentry of Kiangsi and Kuangtung provinces some time ago decided to construct the line themselves without resorting to foreign loans; but their scheme was frustrated by the civil war. The Kuangtung authorities have addressed a telegram to the Tuchun of Kiangsi stating that should they procrastinate, Japan will certainly step in, and that steps should be taken at once to construct the line. It has been agreed by the two provinces that a Company should be organized, and the local authorities should do their best to urge the merchants to subscribe shares.

Changsha-Changteh Project.—Peking newspapers report that the Chinese authorities are contemplating the construction of a line between Changsha and Changteh in Hunan Province. Attention must be called to the fact that this line is already pledged under the contract held by Messrs. Pauling & Co., of London, for the building of a line from Shasi, on the Yangtze River, to Shingyifu in Kweichow Province.

Krupp Works Show Loss.—For the first time since the foundation of the Krupp arms industry at Essen the balance sheet of the concern this year shows a loss. The deficit amounts to 36,000,000 marks ($7,200,000), but it is covered by a balance brought forward and a special reserve of 20,000,000 marks ($4,000,000).

The Krupp works are at present constructing locomotives, freight trucks, agricultural machinery and moving picture apparatus instead of guns.

Japan and the Chinese Eastern Railway.—Concerning the state of affairs in the Chinese Eastern Railway, Mr. Hsu Nai-lin, Civil Governor of Kirin, reported to the Peking Government as follows :—"According to the report of an agent the Japanese are endeavoring to assist Semenoff in his activities in the eastern part of Irkutsk, and in return they are to obtain the mining and forestry rights of that region. Semenoff has sent a delegate to Japan in this connection. It is also reported that the Japanese coaxed the Russians to increase their troops along the Chinese Eastern Railway and to base such action on the ground that the Chinese troops along this railway are neglecting their duty. That the Japanese are anxious to grasp the right of protecting the Chinese Eastern Railway is a general belief. The very fact that the Japanese are said to be assisting the Bolsheviks to create trouble round about this vicinity is conceivably a means of attaining this end, etc."

Projected Kalgan and Kiakta Railway.—According to the "Shun Tien Shih Pao," Gen. Hsu Shu-cheng, who was appointed the Superintendent of the proposed Kalgan-Kiakta Line, being anxious to see it built at once had an interview with Mr. Tseng Yu-chien, Minister of Communications, and discussed the matter with him. It is understood that the road will be built with the surplus of the Peking-Hankow and the Peking-Suiyuan railways. A survey will be made in May this year.

Extension of Yueh-Han Railway.—The Ministry of Communications of the Canton Military Government has again ordered the President and Vice-President of the Yueh-Han Railway Company to complete the line from Shiuchow to Pingshek. Some time ago the Yueh-Han Railway Company sent an engineering squad to investigate conditions along the line, and it has submitted a report that the cost for construction of the line would approximately be one million dollars. The President and Vice-President, seeing that the Railway Company's coffers are depleted, and that it is financially impossible for the Railway Company to undertake the extension at present, have requested the Ministry of Communications to supply money for constructing the line.

American Locomotives for Belgium.—Contracts for the building of seventy-five railroad locomotives for the Belgian government have been signed by the American Locomotive Company. They are of a new design and construction will be delayed for weeks while plans are being prepared.

The South Western Provinces' Railway Scheme.—The Canton Military Government has issued another instruction to the Tuchuns and Shenchangs of Yunnan, Kueichow, Szechuan, Shensi, Kuangtung, Kuangsi, Hunan and Fukien, pointing out the importance of the immediate construction of railways in their provinces in order to secure prosperity and facility of communications in the country. They are informed of the establishment of the Office of the Director-General of Railway Construction and urged to co-operate, etc. As it has been discovered that the main object of the scheme was to secure foreign loans and to strengthen the positions of the southern leaders, the President has decided to lodge a protest with the South, and notify the Foreign Powers of his decision not to bear any responsibility for any loans concluded without the approval of the Central Government. A mandate will also be promulgated informing the public of the sinister motives of this railway scheme.

The unified control of the railroads of Southwest China was planned long ago. It is reported that the following appointments were made at a recent meeting of the Directors of the Southern Military Government :—

Associate Directors for Szechuan—Hsun Ke-wu and Yang Shu-tsan, for Kwangtung—Moh Yung-sin and Chang Ching-fan, for Kwangsi—Tang Hou-ming and Li Chin-chen, for Hunan—Tang Yen-kai, for Yunan—Tang Chi-yao, for Kweichow Liu Shen-si, for Shens—Yu Yeu-jen and Chang Fan, for Fukien—Lin Bao-yi and Cheng Chun-ming.

New Railway Venture in North Chosen.—A plan has for some time past been under consideration to establish a railway company in Korea under the name of the Hokusen Kogyo Tetsudo. The promoters, it is understood, filed on December 22 last an application with the Government-General for permission to do so. In addition to the construction of a railway through the northern part of Korea the projected company, when in working order, will undertake the investment of capital in afforestation, mining, and electrical and other ventures. The capital of the company is ten million yen, to be divided into 200,000 shares. One million yen will be called in as working fund immediately after the required official permission is obtained.

The Siberian Railway.—Mr. Li Chiao-ao, Chinese High Commissioner at Vladivostok, reports to the Government that the delegations of the Allied Powers at Vladivostok have formed a special committee to control the eastern part of the Siberian railway, with the intention of preventing the military factions from interfering with communication facilities. The operation field of this committee will extend to the Chinese Eastern Railway. Mr. Li asks what attitude he is to adopt towards this matter. The Government has referred this question to the Ministers of Foreign Affairs and Communications for further discussion.

TRAMWAYS

Peking Tramway.—The plan of constructing a tramway in Peking, which has remained in abeyance since the outbreak of the European War, is again under the consideration of the Peking Municipal authorities. The right to construct this line is held by the Banque Industrielle de Chine.

ROADS

Roads in Kwangtung Province.—The Managing Director of the Canton-Samshui Railway Company has recently proposed to construct a motor road from Fatshan to Kuanshan. The proposed road is 15 miles long and will have three stations to be located at Lansek, Shuitang and Kuanshan. It is estimated to cost more than $400,000.

Road Construction Company.—Some of the leading business men in Japan have formed a company with a capital of several million yen for the purpose of undertaking road construction contracts.

SHIPBUILDING

A Reinforced Concrete Motor Vessel.—The motor vessel *Cochin-Chine*—the first reinforced ship of considerable size to be constructed in the East—recently arrived at Singapore from Saigon with a cargo of 1,000 tons of rice. The vessel is said to be a credit to the enterprise of Messrs. Brossard & Mopin, reinforced concrete specialists, of Saigon, Tientsin, Singapore, etc., by whom she was

constructed at Saigon. The *Cochin-Chine* is 270 feet long and 38 feet broad and is constructed on a specially designed cellular system combining very strong resistance with lightness. She has two 500 horse power Diesel motor engines, which were procured in America from Mackintosh & Seymour, who are well-known makers of this type of engine in America. The maiden trip down to Singapore from Saigon was made in heavy weather but the vessel behaved admirably, and Capt. Jourdan expresses great satisfaction with her sea-going qualities. She is capable of carrying altogether 2,000 tons of cargo, and is intended to trade between Singapore, Saigon and Haiphong.

Japan to Build 24 Warships.—The Japanese Government has decided to build two battle cruisers and twenty-two other warships beginning the next fiscal year and will submit estimates for these ships to the next session of the Diet for approval, according to the vernacular press of Tokio.

The 40,000-ton battle cruisers would cost a total of $60,000,000, three light cruisers of 5,000 tons at a combined cost of $13,500,000, six destroyers of 800 tons at $4,800,000, twelve submarines of 1,000 tons each to cost a total of $15,000,000 and three river gunboats at $1,125,000, the combined cost of all the boats being $94,425,000. The expenditure would be spread over three years.

The building of the battle cruisers would complete the "eight and eight" squadron which has been decided upon by Japan as necessary for the defence of the country.

INDUSTRIAL

Kiaochow Bay Salt Areas.—According to the latest investigation of the Civil Administration of Tsingtao, the total area of the salt-fields along the shore of Kiaochow Bay amounts to 2,630 *cho* (one *cho* being equivalent to 2.45 acres). A vast area comprising 6,765 *cho* convertible into salt-fields, is still left in its undeveloped state. The amount of salt-manufactured in 1918 was 300 million catties, which was increased to 450 million catties during last year. The output this year is expected to exceed 600 million catties.

Cloth Making in China.—Two American business men who have returned from Kaoyang have reported that this small city produces $21,000,000 worth of cloth annually, woven on looms in the homes of the country people and taken to the city to be sold and dyed.

AVIATION

China Building Planes.—The work of building three aeroplanes, which had been ordered by the Chinese Naval Ministry, has been completed by the Foochow Dockyard. These planes are of the biplane type and each has a seating capacity for two persons. They are now being tested and have given highly satisfactory results. The building of these machines was carried out under the supervision of a number of foreign-trained Chinese engineers and the different parts of the planes were mostly hand made. A bigger one designed to accommodate from 16 to 25 passengers is being planned.

Tokyo-Peking Flight Project.—Mr. Nagaya, Director of the Japan Aeronautic Association, made a trip to Antung to study landing places connected with the intended flight between Tokyo and Peking. He states that the aerial trip will be made some time in April or May, by using a 250 h.p. machine in the possession of the Association. Either Mr. Yamagata or Mr. Sato will operate the machine.

Hongkong a World Junction.—Commodore Beaumont, President of the Commission which is arranging for the American Aerial Derby around the world, remarked at a meeting at Hongkong that the Colony of Hongkong held the distinction of being on the new official wall map of the world's airways prepared by the Aeronautic Maps Association of New York, which was prepared specially to show possible airways and air-routes in relation to world traffic and commerce where aircraft could solve difficult problems of transportation. The Chairman of the Chamber of Commerce moved that "in opinion of this meeting an Aviation Club should be formed in Hongkong having as its object the encouragement and expansion of commercial aviation in general and its application to this port in particular." The resolution was carried unanimously.

Chinese Aerial Regulations.—Six regulations have been drawn up at Peking for the purpose of enlarging China's aerial forces. The principal points are (1) to train a larger force for service; (2) to fix aerial stations throughout the country; (3) to form an aerial league; (4) to encourage aerial enterprises among the people; (5) to subscribe a fund for the families of those killed in aerial service and (6) to establish a bureau to translate foreign books on aerial affairs.

HARBORS

Japanese Money for Halutao!—It is reported that the old scheme to construct an efficient port at Hulutao is being revived as a rival to the proposed ice-free port at Tachingho. Mr. Chow Chou-hsiang, former Civil Governor of Hunan, is mentioned as Director of Construction, and it is said that a loan is being arranged with Japanese interests.

Naval Base Near Lungkow.—According to the "Kung Yen Pao," Admiral Sah, Minister of the Chinese Navy, has decided to construct a naval port in the vicinity of Lungkow with necessary fortifications. When the plans, which are now being discussed among high officers, are fully drawn up, the matter will be placed before a cabinet meeting for approval.

ELECTRICAL ENTERPRISES

Yangtze Water Power.—According to a report from Szechuan, a series of experiments was carried out under the direction of a British engineer at a place below Chungking known among the Chinese as Sanhsia. It was discovered that the velocity of water there is sufficiently powerful to generate 3,282,400 h.p., far stronger than the force of the Niagara Falls. A plan to establish a large electric power-house at a place near Tsing-shihhsia in Wushan Hsien, in order to supply motive power to regions along the Yangtze Valley, is contemplated by British and American capitalists and Mr. Liang Shih-i. It is said that the amount of capital required for the enterprise will run up to £6,250,000, which will provide for the construction of eight locks at Wushan, Kueinchow, Anping, Yunyung, Siaokiang, Chunchow, and Tsingchow and all other necessary expenses including the cost of machinery and installation. In last issue the FAR EASTERN REVIEW dealt with this subject.

Shanghai Electricity Cheaper.—The Shanghai Electricity Department announced recently that a seven per cent. reduction is to be made in the prices charged for electric light, heat and power.

Y.75,000,000 for Hydro-Electric Plant.—A group of leading business men in Nagoya and Tokyo, Japan, are filing with the authorities application for permission to utilize the water of the Tenryu river running through Nagano and Shizuoka Prefectures, with a view to establishing a hydro-electric company in Nagoya under the name of the Tenryugawa Suiryoku Denki Kabushiki Kaisha. The capital is fixed at Y.75,000,000. It is said that they will put up several power stations near Ashimojo, Ina-gun, Nagano Prefecture, and other places along the river. It is expected that part of the company's current will be transmitted to Tokyo at a pressure of 100,000 volts.

British Protest Against Mitsui Wireless.—A Peking despatch to the "Asahi" states that the Marconi Company has caused the British Minister to enter a formal protest with the Chinese Navy Department against a wireless contract entered into between the Mitsui Company and the Chinese Government last year.

Wireless for Kobe.—The Hyogo Prefectural authorities invited the principal Kobe shipping agencies to contribute towards the fund for providing a wireless telegraph apparatus at the Marine Observatory now under construction at Ujinoyama, Kobe. It is now reported by the "Kobe Shimbun" that Y.100,000 out of Y.150,000 has already been promised by the N.Y.K., T.K.K. and O.S.K. combined while for the remainder the Governor asked for private contributions.

New Lighting System for Woosung.—The Woosung Electric Lighting Co. has taken a long time in its formation, owing to the necessity of obtaining a charter from the Ministry of Agriculture and Commerce, Peking, and partly to the difficulties in securing a suitable site for the power station. But no time seems to have been wasted after the initial stage, as the power station and a substantial building to be used as offices, on a plot of ground north of the Railway Bridge in the West Market in Woosung, are almost completely built. If all goes well, the company expects to give the Woosung public electric light by the end of February. At present, the plant provided is of the alternate-current type, and its capacity will light over 2,000 lamps.

Kobe to Increase Electric Current.—The Kobe Municipality intends to increase its present three dynamo installation which is supposed to produce 12,000 kilowatts to one of four stands so as to obtain 24,500 kilowatts for tram-car traction and lighting. The proposed new dynamo will probably be set up at Minatogawa. The Municipality calculates the following figures for the extension works: The second tramway construction, Y.9,099,520; the extension in dynamos, Y.4,048,000; electric supply (additional), Y.2,401,571; the road extension for tramway, Y.14,887,233. Total Y.30,436,424. The above sum is to be defrayed by loans over a period extending from this fiscal year to 1923.

Largest Steam Turbines in Far East.—Two 25,000 kilowatt steam-driven turbine units have been ordered from the Westinghouse Electric and Manufacturing Company, East Pittsburg, for shipment to Japan. When installed they will complete the largest steam-driven electrical installation in the Far East, now being erected at Osaka, Japan, for the Osaka Electric Light Company. This company furnishes light and power to street railways, steel plants, shipyards, copper refining plants, paper mills, electro-chemical installations, etc. These two new units will bring the capacity of this plant up to 100,000 horsepower.

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X-Ray and medical equipment
Lamps, fans, wiring devices, fixtures and glassware
Domestic appliances for heating, cooking, etc.
Electric commercial and pleasure vehicles

Mechanical Supplies

Machine shop equipment
Mechanical transmission equipment
Pumps, meters, instruments and gauges
Stationary and marine oil engines
Pipe and pipe fittings
Belting, packing and asbestos mechanical goods
Flour, rice and oil mill machinery
Compressors and drilling equipments; blasting materials
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Scales, vaults, tractors, trucks and road-making materials

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GENERAL IMPORTERS AND EXPORTERS

WELL established and widely connected banking correspondents in all the market centers of the Far East provide for Irving customers reliable and responsive sources of information and service facilities for carrying out banking and commercial operations in every country of the Orient.

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American Wireless Scheme.—A Radio Corporation of America has been formed to operate commercial wireless between America, Britain, France, Scandinavia, China and Japan. The capital is $20,000,000. The rates will be a third less than the cables. It is understood that the corporation will be controlled by the General Electric Company which has absorbed the Anglo-American and Marconi's interests. Operations will be begun as soon as the Government returns the wireless stations operated during the war.

Phone to Connect Shanghai and Hangchow.—A long distance telephone between Shanghai and Hangchow for military use will be installed by order of General Lu Yung-hsiang, Tuchun of Chekiang. The line will connect the Office of the Defense Commissioner at Shanghai, the Military Commissioner's yamên at Kashing, the headquarters of the Commander-in-chief at Sunkiang and the Office of the Military Governor at Hangchow. It is estimated that the cost of the apparatus and installment will be $8,000. The telegraph poles along the Shanghai-Hangchow Railway will be made use of.

MINING

Sino-Foreign Mining Enterprises.—The Peking Government has sent instructions to the local authorities of Hunan and Hupeh Provinces to inform the mine owners that it is absolutely necessary for them to obtain official sanction before they enter into any agreement with foreigners for the working of mines. At the same time the various legations at Peking were informed through the Waichiaopu to the effect that any agreement concluded with Chinese without the previous knowledge of the central government will be invalid.

Mining in South-West Yunnan.—A report from Rangoon states that a party of 23 engineers, drill-runners, diamond setters and gas engine experts from America, representing the New York Orient Mines Company, and exploration and mining engineers, representing Messrs. E. J. Longyear & Co., arrived there *en route* for south-western Yunnan, viâ Bahmo, where they are to spend about two years prospecting, and developing existing mining properties. The party is in charge of Mr. Clifford Harris, and expert mining engineer, and Mr. C. H. Smith, who is the chemist and analyist of the party. Dr. Oscar C. West is the medical man, while Mrs. West will act as nurse. Mr. Louis Peterssen is the foreman of the drill-runners and diamond setters who include Norwegians and Swedes as well as Americans. Mr. John Wellington Finch is the Manager of the Orient Mines, Limited, and the organizer of the party.

The Seoul Mining Company.—During the month of January 12,500 tons of ore were sent to the Tulmichung mill from the Tulmichung and Tong Ahm mines, resulting in a gross production of Y.158,909.26. The Suan mill continues shut down during the severe winter weather, owing to the prohibitive cost of fuel for heating the mill. Mining operations in the Suan mine are proceeding, and the ore is being stored at the mill for treatment in the Spring.

CONSTRUCTION

Extension of the Tehchow Arsenal.—Arrangements having been made with the Central Government, the Tehchow Arsenal will be supplied with a sum of $1,200,000 to purchase two sets of machinery for the manufacture of rifles and ammunition. When the new machinery is installed the Arsenal's manufacturing power will be doubled, says a Tientsin paper.

Wuchang Waterworks.—Just before the war a scheme for establishing a waterworks in Wuchang was launched, but owing to the failure of funds, it had to be abandoned. Lately, however, this scheme has been revived, says the "North-China Daily News" Correspondent, and it looked for a while as though we here were going to be as up-to-date as our fellows in Hankow. It appears however, that the project has again been held up owing to the refusal of the Board of Industry to grant a permit to proceed with the work. I believe that efforts are being made to get over this difficulty and perhaps even yet the time may come when the water tap will usurp the place of the water coolie and another bit of old China will have disappeared from our midst.

New Bund at Canton.—The vernacular papers report that the Canton Municipality is making plans to open up and construct a bund along the Honam river front. Surveyors have been sent out to survey the route for the proposed bund, and to find out the exact area of all public lands in that section.

FINANCIAL

A $6,000,000 Loan in Kirin.—Information has been received in Peking to the effect that on account of the financial stringency now prevailing in the province, the Kirin Civil Governor is contemplating a loan of $6,000,000 from the local branch of the Yokohama Specie Bank, on the security of certain unmovable properties and the Yung Hang Local Bank. But the Japanese authorities only consent to extending a loan of $3,000,000, which counter-proposal does not meet with the approval of the Civil Governor who is endeavoring to get things through with the aid of the financial authorities in the Capital.

The Bank of East Asia, Ltd.—We learn from authoritative sources that the Bank of East Asia, Ltd., is organizing a branch office at Shanghai to commence business early in March this year. They have already acquired the ground floor of No. 30 The Bund, a large and substantial structure between Kiukiang and Nanking Road to accommodate that branch, which will be under the charge of Mr. Li Tse-fong now assistant Manager of the parent Bank of Hongkong. Besides being a University graduate and a man of liberal education, Mr. Li is also an experienced and successful business man and was for several years managing partner of the well-known Wo Fat Sing firm which operates the Lai Hing S.S. Co., Ltd., The Hung Hing S.S. Co., Ltd., and The Luen Hing S.S. Co., Ltd. The Bank was incorporated in Hongkong under the Companies' Ordinances, having a fully paid-up Capital of two million dollars all of which was subscribed by the Chinese. The Bank was opened for business in January last year and the result of the first year's working was very satisfactory having a net profit of more than three hundred and seventy thousand dollars. It has now a deposit of more than four million dollars and a resevre fund of two hundred thousand. The Bank has recently bought in Hongkong a valuable leasehold property in the financial section of the City known as No. 10 and 10A Des Voux Road as premises for its Head Office. Besides its branch in Saigon which was opened a few months ago, and its branch in Shanghai which will be opened shortly, there are two other branches in the course of organization for Canton and for Haiphong.

Sino-American Bank.—The Commercial and Industrial Bank was opened at Peking on February 6. Mr. J. A. Thomas, First Vice-President, and Hsu En-yuan, Second Vice-President, gave a reception, the guests including many notable Chinese and foreigners.

China's Salt Revenue.—The net salt revenue, after meeting administrative expenses, paid into the group banks during 1919 amounted to $80,636,503 an increase of $9,070,983 over 1918. All obligations secured on the salt revenue were fully met and the surplus funds released to the Chinese Government amounted to $75,213,449, including the contribution of $6,205,756 received from the Maritime Customs. Of this amount, however, some 26 millions represent sums either retained locally or appropriated by the provincial authorities or military commanders.

Tea Industrial Bank.—Mr. Chin Wei-wen, a wealthy tea merchant of Anhui Province, China, has applied to the Ministry of Finance, Agriculture and Commerce at Peking for permission to organize a Tea Industrial Bank in Shanghai, Peking and Anking with a capital of $5,000,000. He has just returned from a tour in Japan, Ceylon and India for the study of the tea industry there.

MISCELLANEOUS

University for Manchuria.—The authorities in the Manchurian provinces are reported to be making preparation for the establishment of a University for the Three Eastern Provinces. At a recent meeting of the educational authorities in Manchuria, a sum of $1,000,000 was voted for the annual expenditure of the institution, in addition to which $2,000,000 will be raised for the initial outlay in connection with the establishment of the University.

Forests for China.—In order to encourage the observance of Arbor Day, and increase its significance throughout China, says the "North-China Daily News," the College of Agriculture and Forestry of the University of Nanking has started a campaign among the lower government and mission schools for the development of school nurseries. Nurseries may be a half *mow* or one *mow* in size, containing six and 10 tree species respectively, and capable of producing from 16,000 to 32,000 young trees. Seeds are furnished at less than cost, at $1 and $2 plus postage for the two sized nurseries. Each nursery contains one or more of the economic trees, such as the oil tree, vegetable tallow, etc.

Inflammatory Pamphlets Amongst Mohammedans.—Mah Fu-hsiang, Commissioner of Ninghsia, and Ma Chi, Commissioner of Kokonor, report that a foreign Buddhist priest is issuing most inflammatory pamphlets in Arabic which are calculated to cause a Mohammedan uprising.

Arms Contracts.—Owing to the foreign Legations' protest against the import of Italian munitions to China, a circular telegram has been sent to the provinces to cancel all contracts, and if any has already been taken delivery of, the same should be returned.

Chinese Mission to Europe.—Mr. S. T. Sze, brother of the Chinese Minister in London, has arrived in Europe in charge of the Chinese Government Mission to visit the devastated areas of France and study commercial conditions and methods in Great Britain and on the Continent.

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Spacing Table, hand operated. Frame of steel construction about 60' long on each side of punch to allow unobstructed access for operating and setting.

Cast-iron carrying rolls, designed to properly support the specified class of material, located every 5' for plates and every 10' for angles, I-beams and channels. Angles and channels for flange punching, punched in pairs, back to back; I-beams punched singly. The rollers vertically adjustable in relation to the dies on the punch for punching the flanges, beams or channels 6' to 15', as specified above. Adjustment obtained by means of screws and worms interconnected by a shaft operated by spider or handwheel located near punch within easy reach of the operator.

Roller frames supported on springs to permit of carrying material through punch free and unobstructed from dies. Rack is of steel cut from the solid and made in sections. Spacing carriages hand operated by means of handwheels and releases lever. Frame all steel and fitted with hardened steel roller bearings.

The desired spacing is obtained automatically, and at the stopping point the carriage is effectively locked against forward or backward movement until released by operator. Spacing carriage clamp is of steel designed to grip plates and angles singly and in pairs for flange punching, and I-beams singly for both web and flange punching, all without change of adjustment. Trailer table equipped for guiding plates through the punch while punching.

Length required for table and punch about 128'.

Punch has capacity to punch simultaneously two $1\frac{1}{16}$" diam. holes through one-inch medium steel. Machine heavily built of A frame double housing type 30" clear between housings. Operated by not less than 35 strokes per minute and especially designed to operate in connection with the spacing table above described, and for punching the size and class of material specified. All gears are covered.

Space occupied by punch, 3' 6" × 10'. Machine heavily built and amply strong. Operated by foot treadle which may be locked in position when desired to run machine continuously.

Weight, Punch and Table complete, without electrical equipment, approximately 55,000-lbs. Is furnished with eight punching units with minimum adjustment center to center of not more than $2\frac{1}{4}$"; two controller levers across face of machine for controlling any combination of gags from the operating side; one set of toggles for gauging clamps for guiding angles of I-beams, and channels for punching flanges.

Housings or uprights of steel, gags, cast steel cut from the solid. Shafts, open hearth steel. Bearing of ample size and bronze bushed. All running parts scraped to perfect bearing and provided with grooves for proper distribution of lubricants. Clutch jaws, or wearing surfaces, on moving clutch and gear, of tempered steel which permits of easy removal when worn. Clutch disengages automatically at each stroke. Adjustable automatic stop at any desired point in the down stroke. Strippers of suitable kind provided for punching specified kind of material.

Foundation plans giving accurately the spacing anchor bolts, together with all necessary information as will permit laying of foundation will be furnished prior to delivery. All necessary instructions for erection and operation will be furnished with machine upon delivery.

TESTED to punch simultaneously not less than 35 $1\frac{1}{16}$" diam. pairs of holes in one-inch medium steel plate on consecutive strokes in one minute, with a clearance between punch and die $\frac{1}{16}$".

Cost—$37,000.

Thomas Multiple Punch and Spacing Table

Thomas Multiple Punch and Spacing Table capable of handling plates 9' wide by 40' long.

SPECIFICATIONS

Ram pressure, 1,600,000 pounds. This pressure is capable of shearing 32 sq. inches of metal flat at each stroke of the punch.

Distance clear between housings, 9' 2", stroke 3".

Number of strokes per minute, 18.

Diameter of Shaft. 12".

Gear Ratio, 15 to 1.

Weight Multiple Punch, 140,000-lbs.

Weight of Spacing Table, 40,000-lbs.

Double housing central ram type.

Punches fitted with two separate sets of punching tools in order to permit the punching of lines of holes across the plate, which are not in line with each other.

Punching tools:

Machine fitted with 48 sets of separately adjustable punching tools, adjustable down to $2\frac{1}{4}$" and controlled by eight levers, 4 levers for each row of punching tools. Spindles may be of unequal lengths in order to reduce the shearing effect and relieve the strain on the machine. For punching rows of holes across the plate where the thickness would exceed the capacity of the punch the holes may be punched by two strokes of the punch, leaving the pacing carriage stationary. The spacing table is automatic and requires no attention from the operator except the manipulation of hand levers for controlling gags for operating. All gears are covered. Cost, $13,500.

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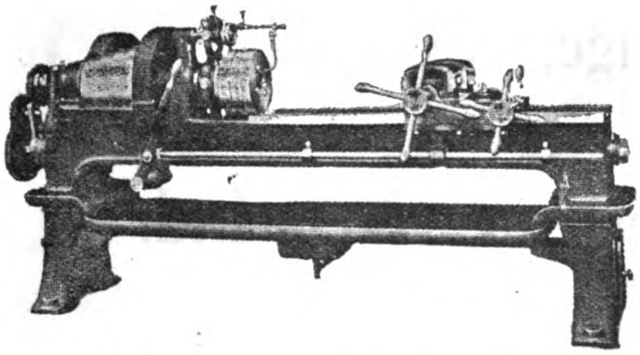

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This Machine has been specially designed for screwing long Bolts, Boiler Stays, etc. It is provided with an extra long bed so that threads 36 inches long can be screwed at one setting. A Leading Screw extending the full length of the bed, and rigidly supported at each end of the bed is fitted. This ensures the thread being screwed perfectly true to pitch, which is of the utmost importance in Boiler Stays and certain other classes of work. The necessary pitch changes are obtained by means of change gears as on a lathe. The Machine is fitted with our Patent Hand and Automatic Releasing Motion, Automatic Closing Device, Micrometer Adjustment for making fine adjustments to the Dies, which can be done while the machine is in motion, Automatic Pump, two-speed Countershaft, etc.

The Machine is made in various sizes, and with two Heads.

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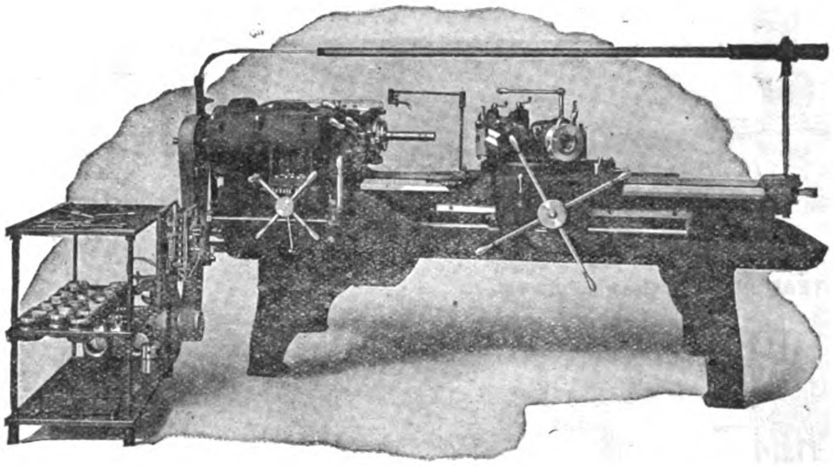

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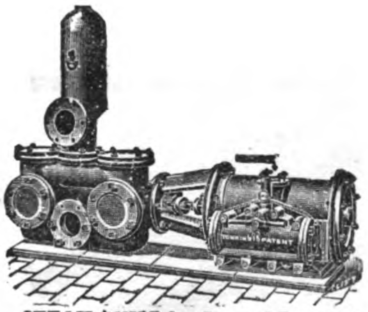

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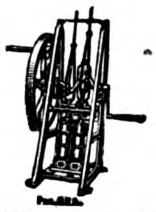

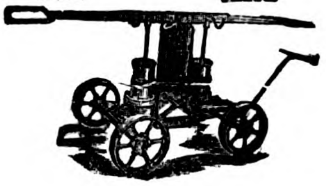

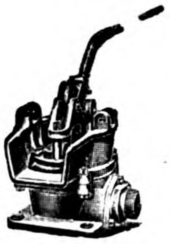

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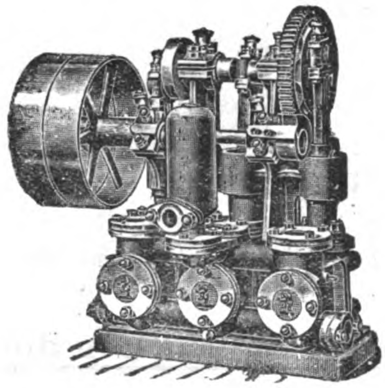

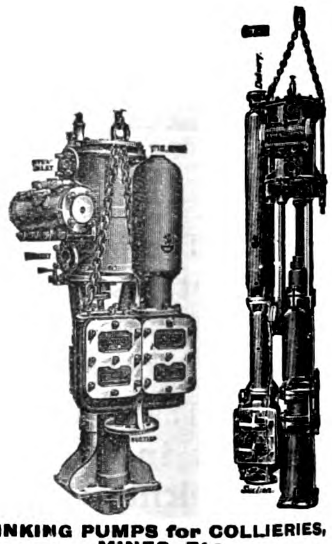

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Fig. 191.

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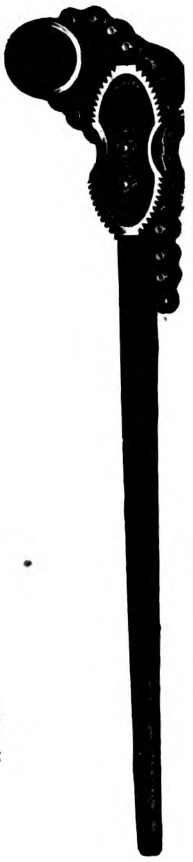

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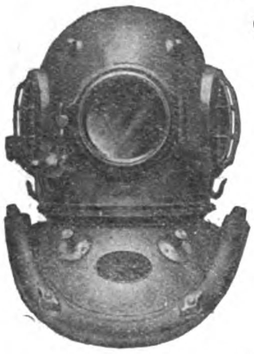

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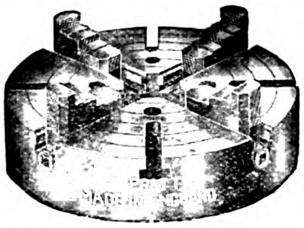

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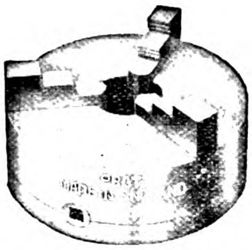

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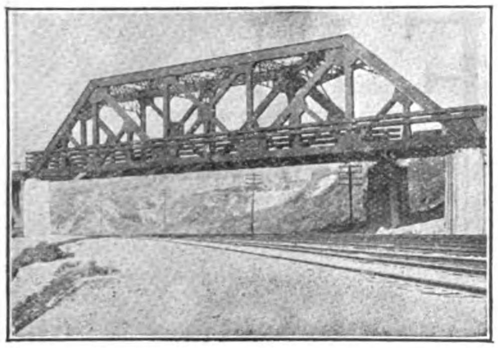

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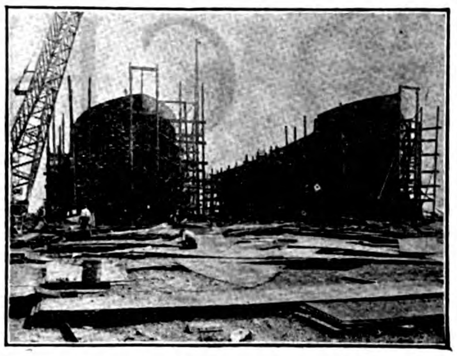

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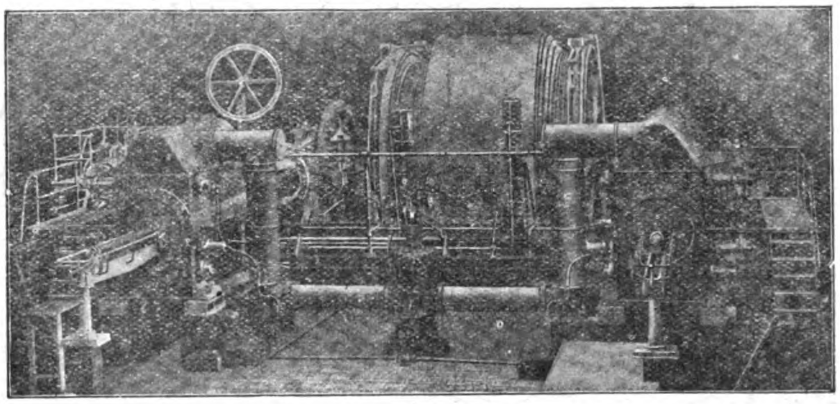

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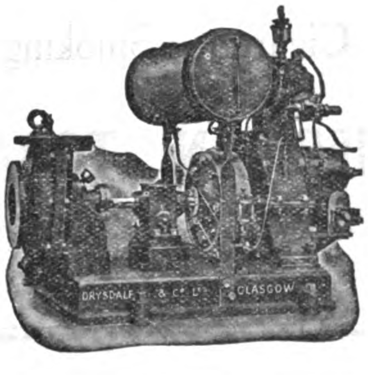

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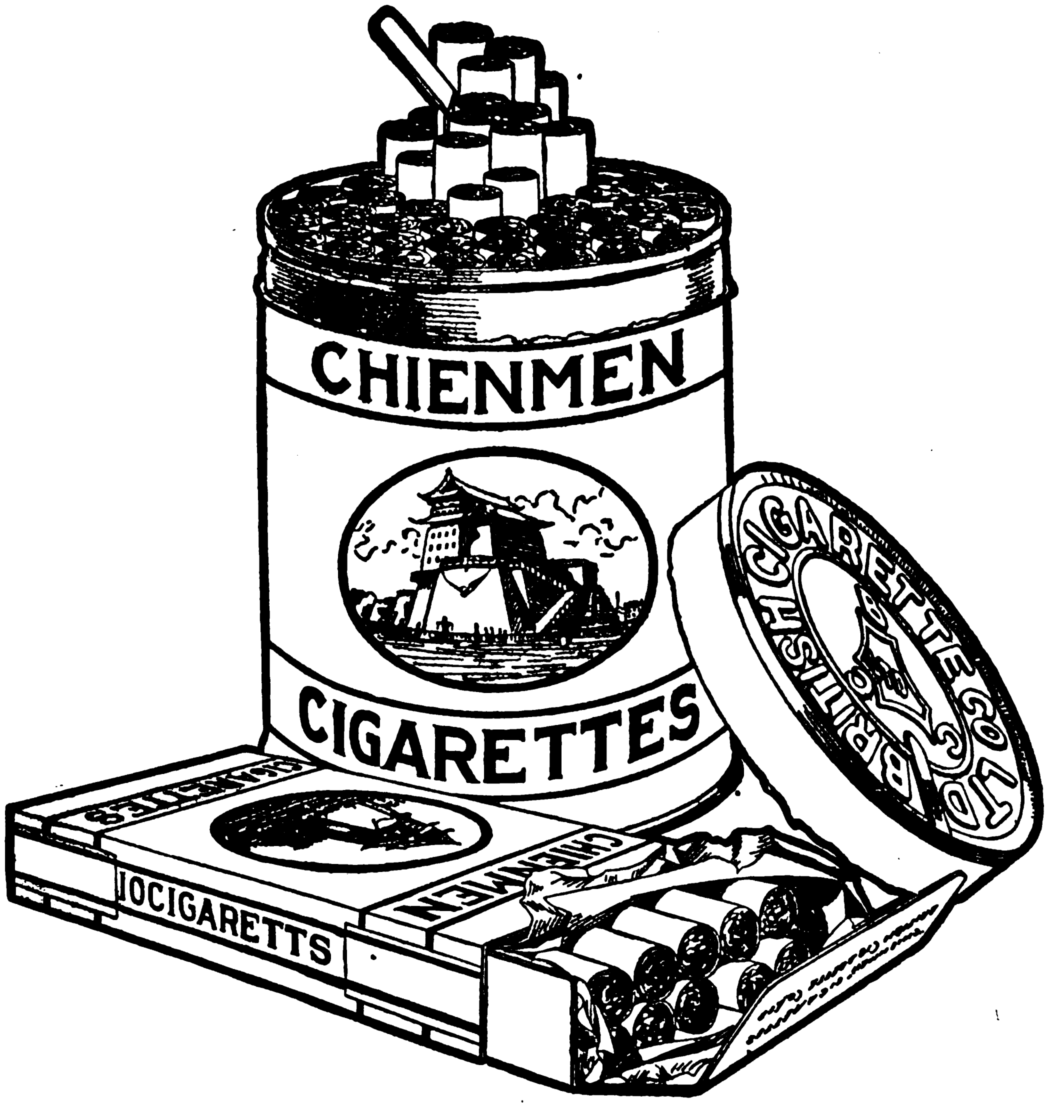

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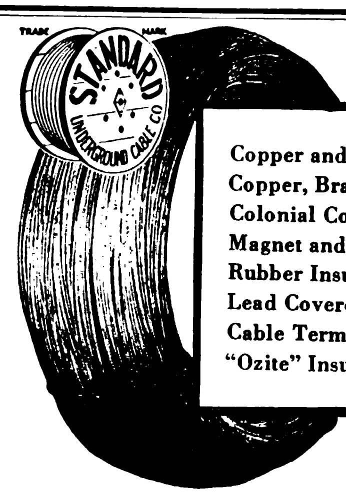

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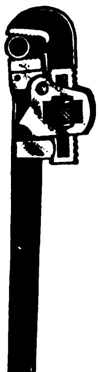

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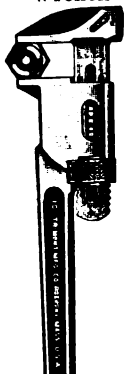

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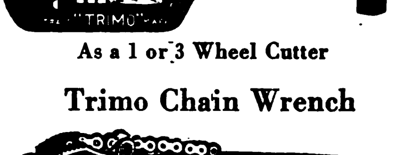

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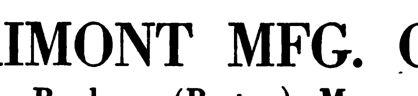

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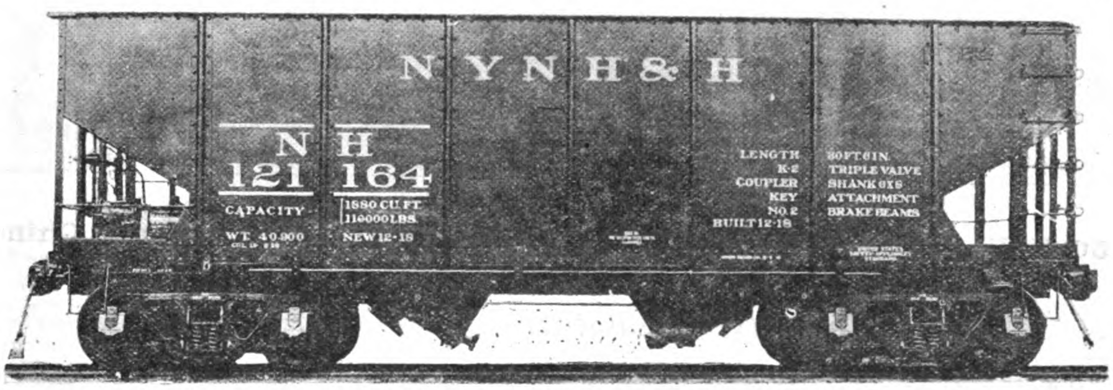

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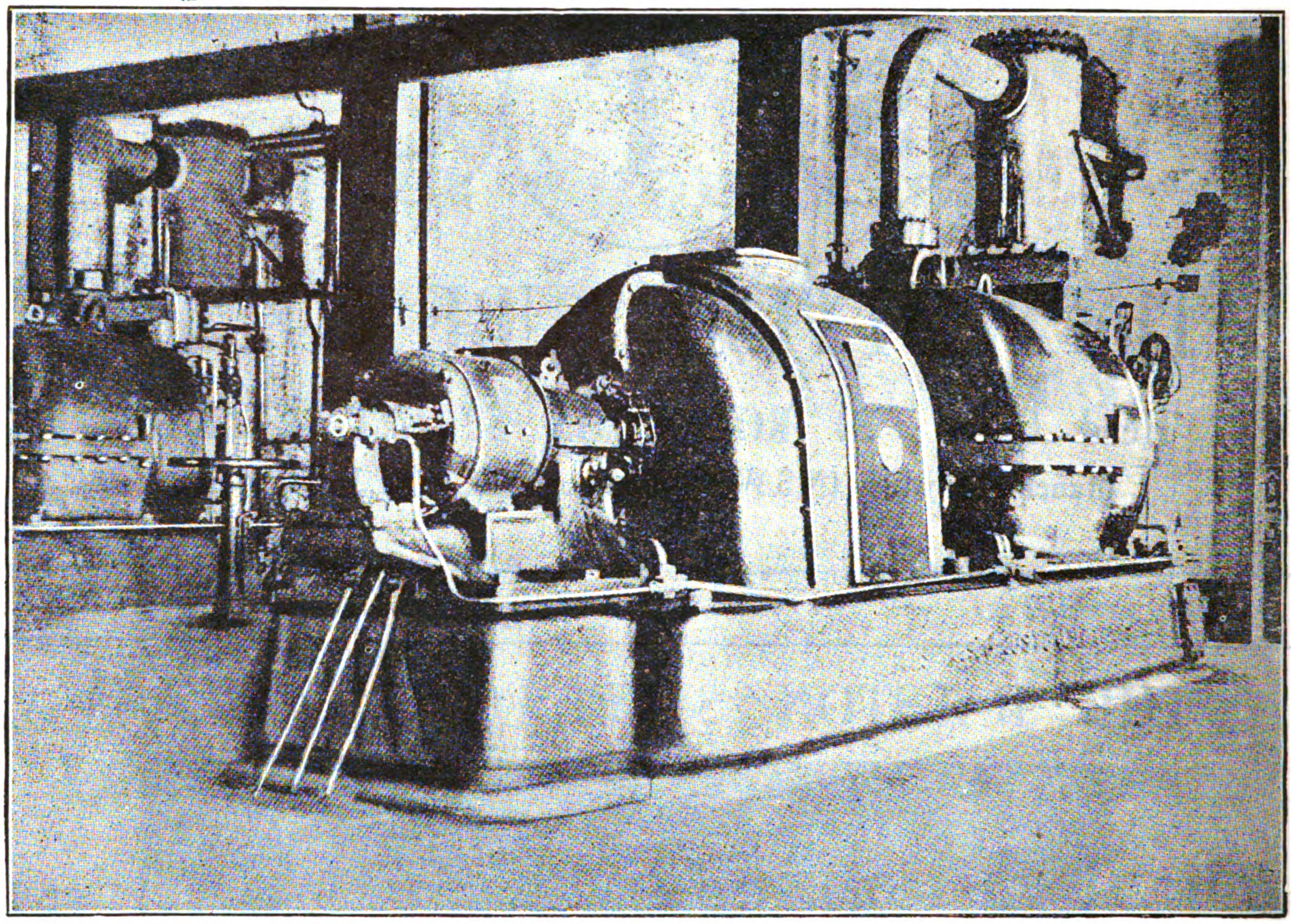

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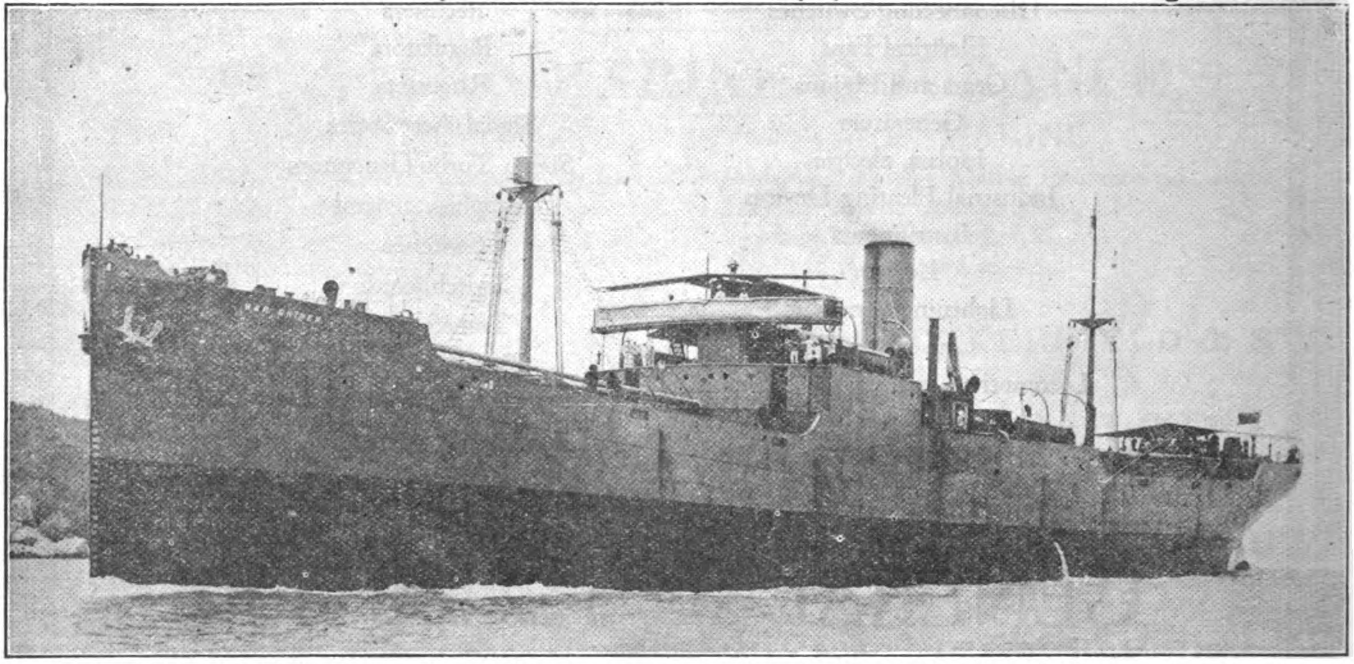

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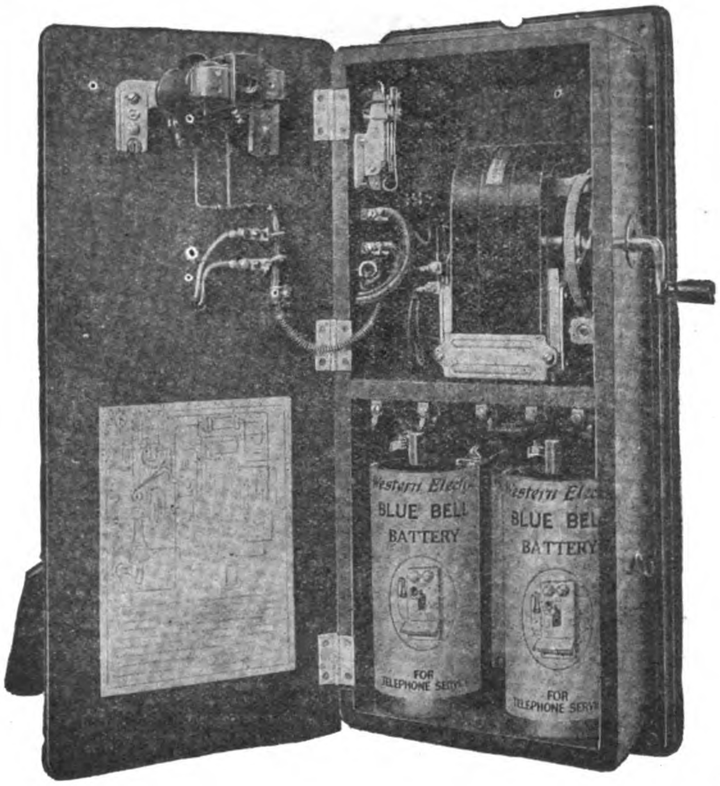

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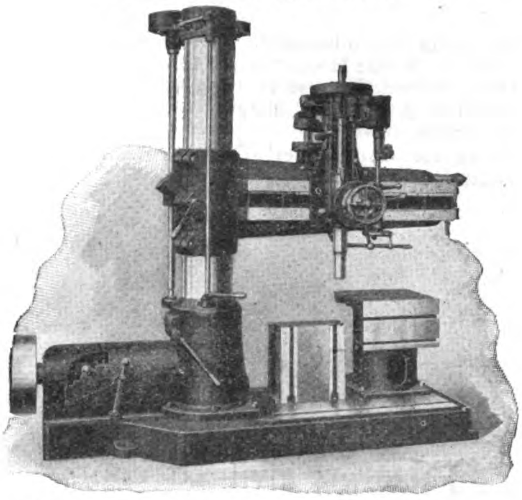

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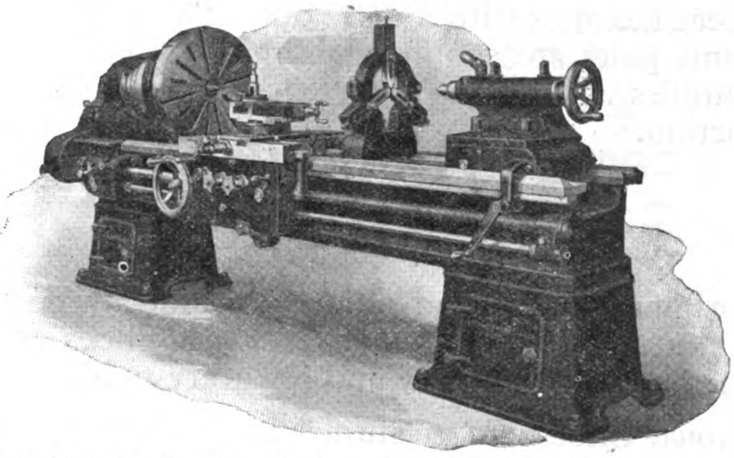

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Benzol
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Caustic Potash
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Coal Tar
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Cresols
Disinfectant Fluids
Disinfectant Powders
Dry Felt Fibre
Glucose
Glycerine
Hair (manufactured)
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Molasses
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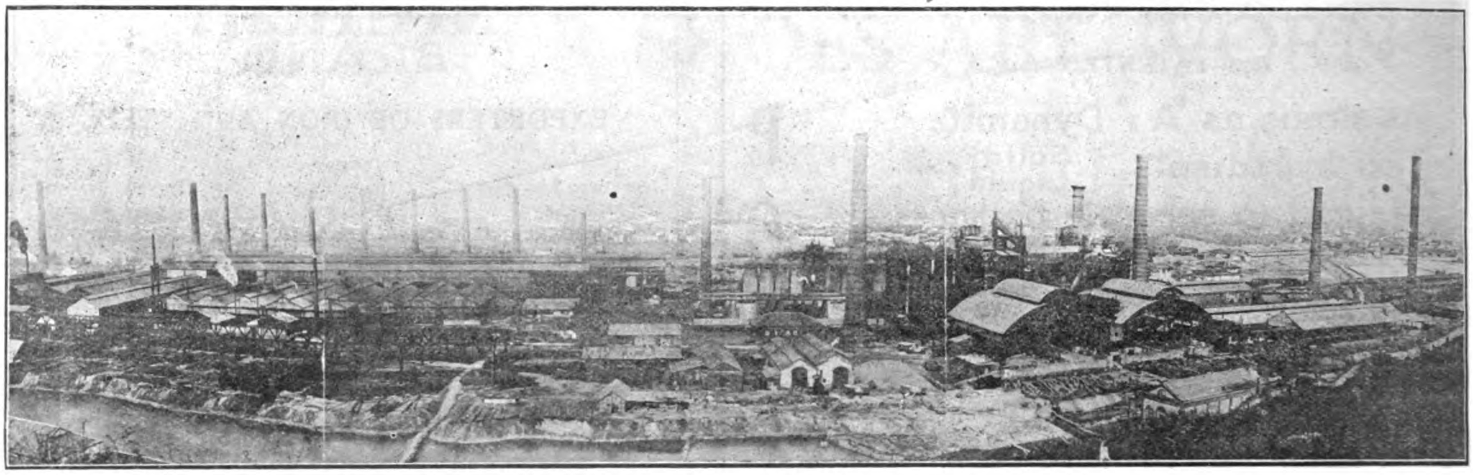
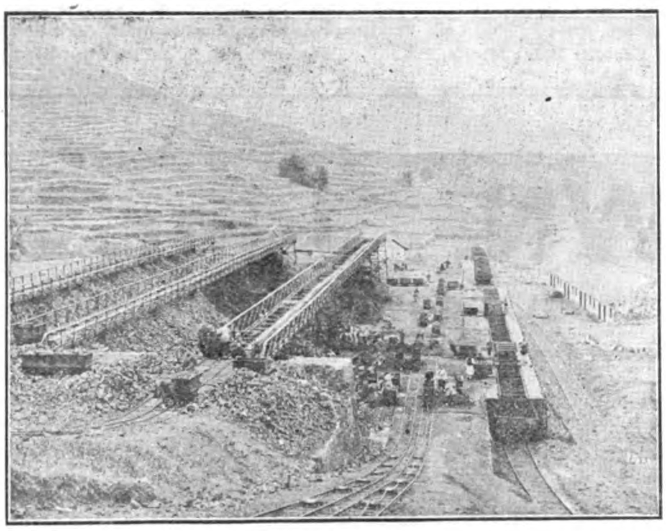
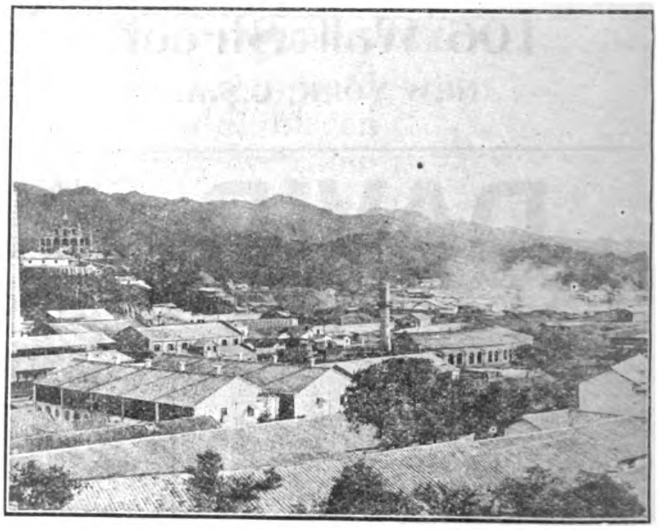


GENERAL VIEW OF HANYANG IRON AND STEEL WORKS

Incorporating The Hanyang Iron & Steel Works, The Tayeh Iron Mines, The Pinghsiang Colliery.



THE TIEHSHAN MINE AT TAYEH



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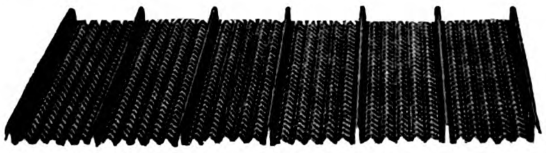

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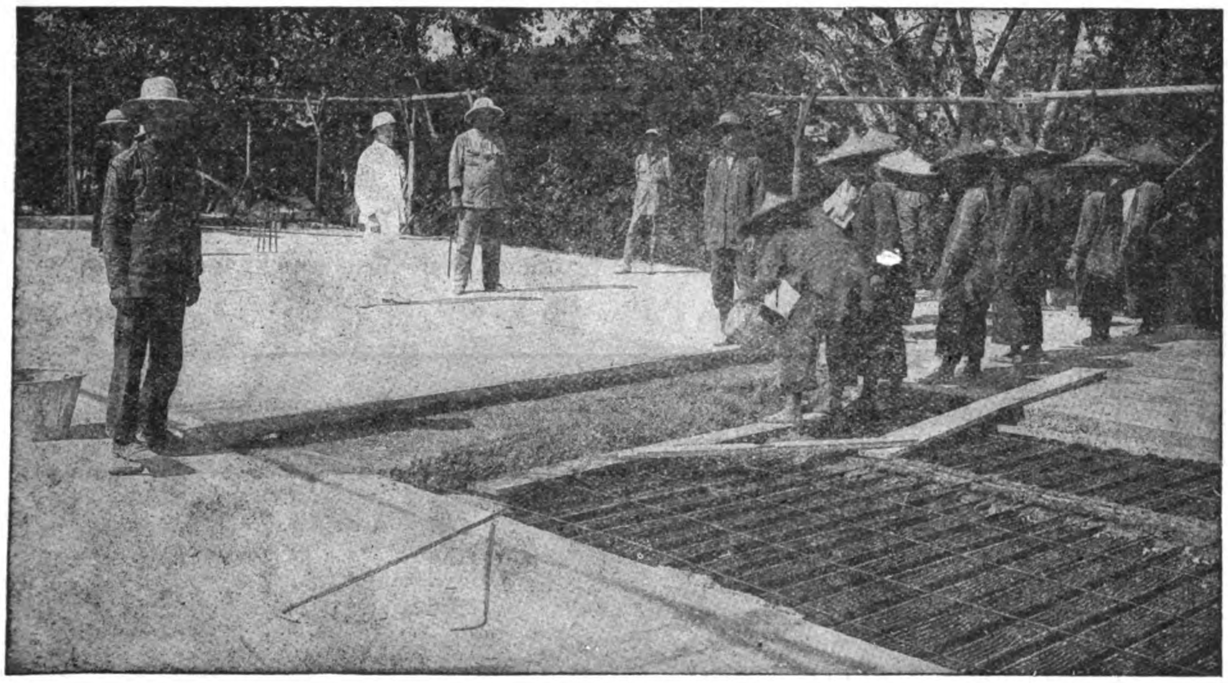

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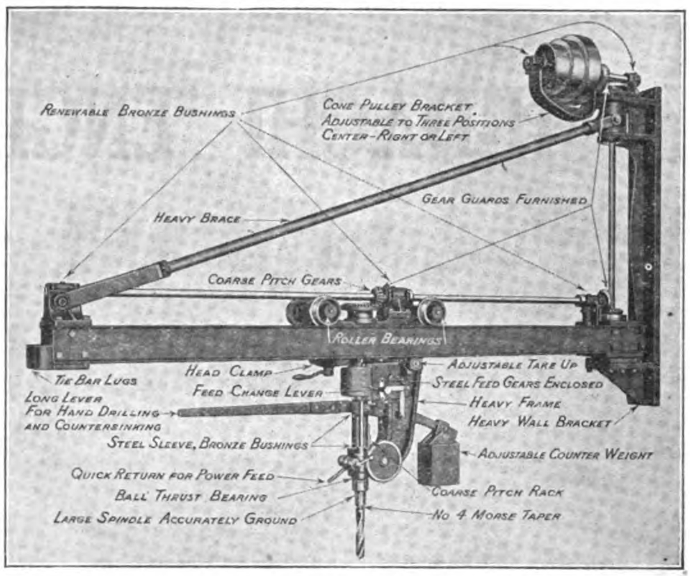

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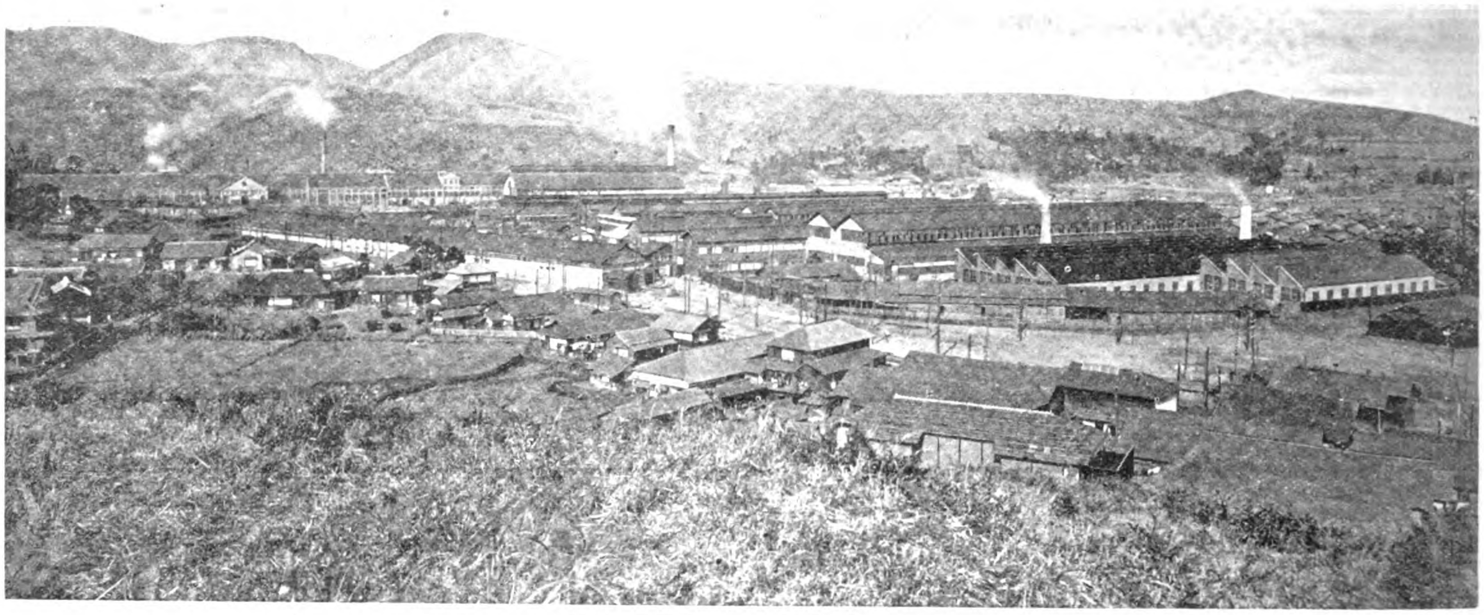

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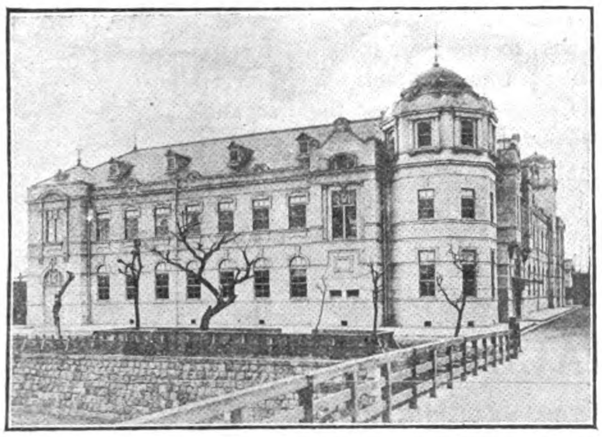

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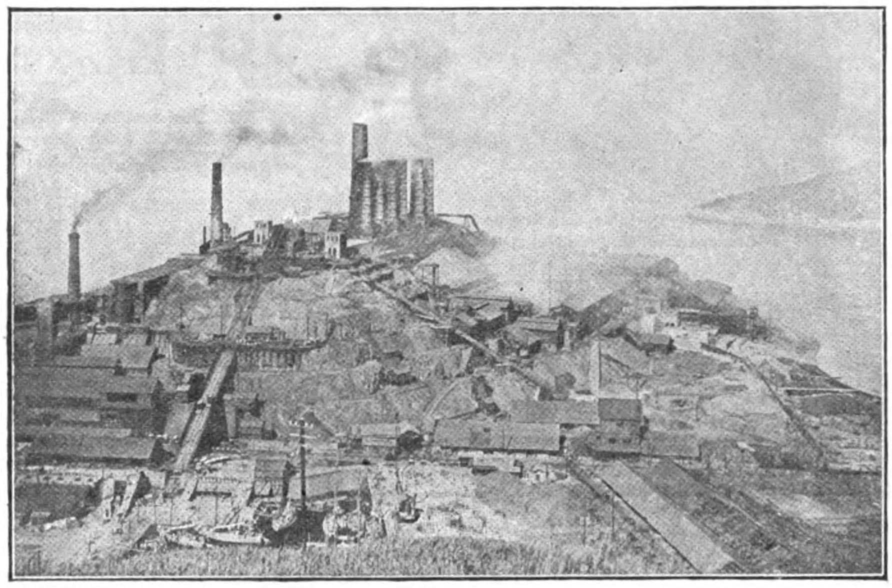

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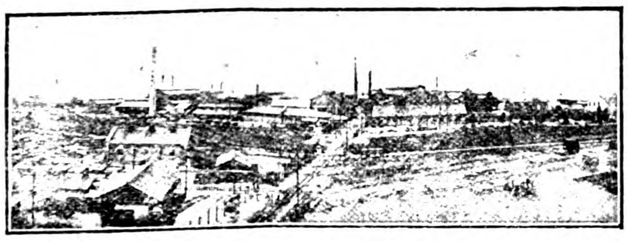

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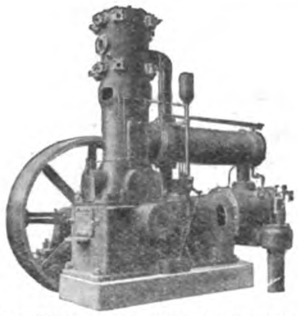
SULLIVAN AIR COMPRESSORS



Sullivan WJ-3, Angle-Compound Compressor, for belt or motor drive. Bulletin 75-EC.

If you need air power, to run rock drills or riveters or air lift pumps or foundry tools, don't forget there's a Sullivan Compressor of just the size and type your conditions need.

Year-in-year-out, efficient power-saving service is characteristic of all Sullivan Compressors.

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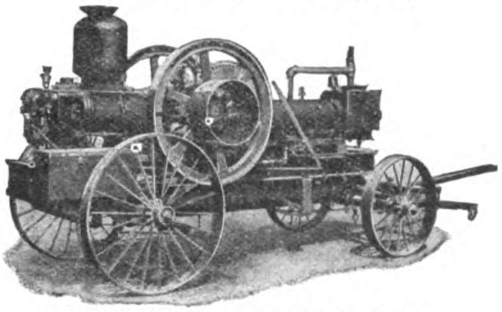

Sullivan WK-3 Portable, Gas Engine Driven Compressor. Bulletin No. 75-EM.

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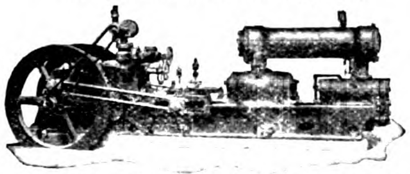
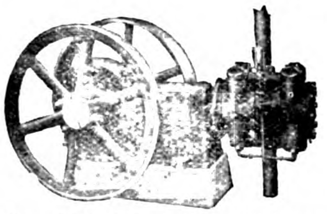
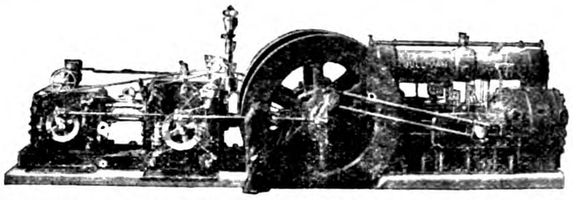
Agents for Japan: MITSUI BUSSAN KAISHA, LTD., Tokyo, Osaka, Yokohama.



Sullivan Steam Driven, Two-Stage Compressor, Class WB-3, with Plate Valves. Bulletin 75-EE.



Sullivan Belted, Single-Stage Compressor. Automatic Lubrication. Bulletin 75-EG.



Sullivan Tandem Compound Corliss Compressor for high fuel economy. Capacities, 1000, 1500, 2000, 2500, 3150 cu. ft. Bulletin 75-EF

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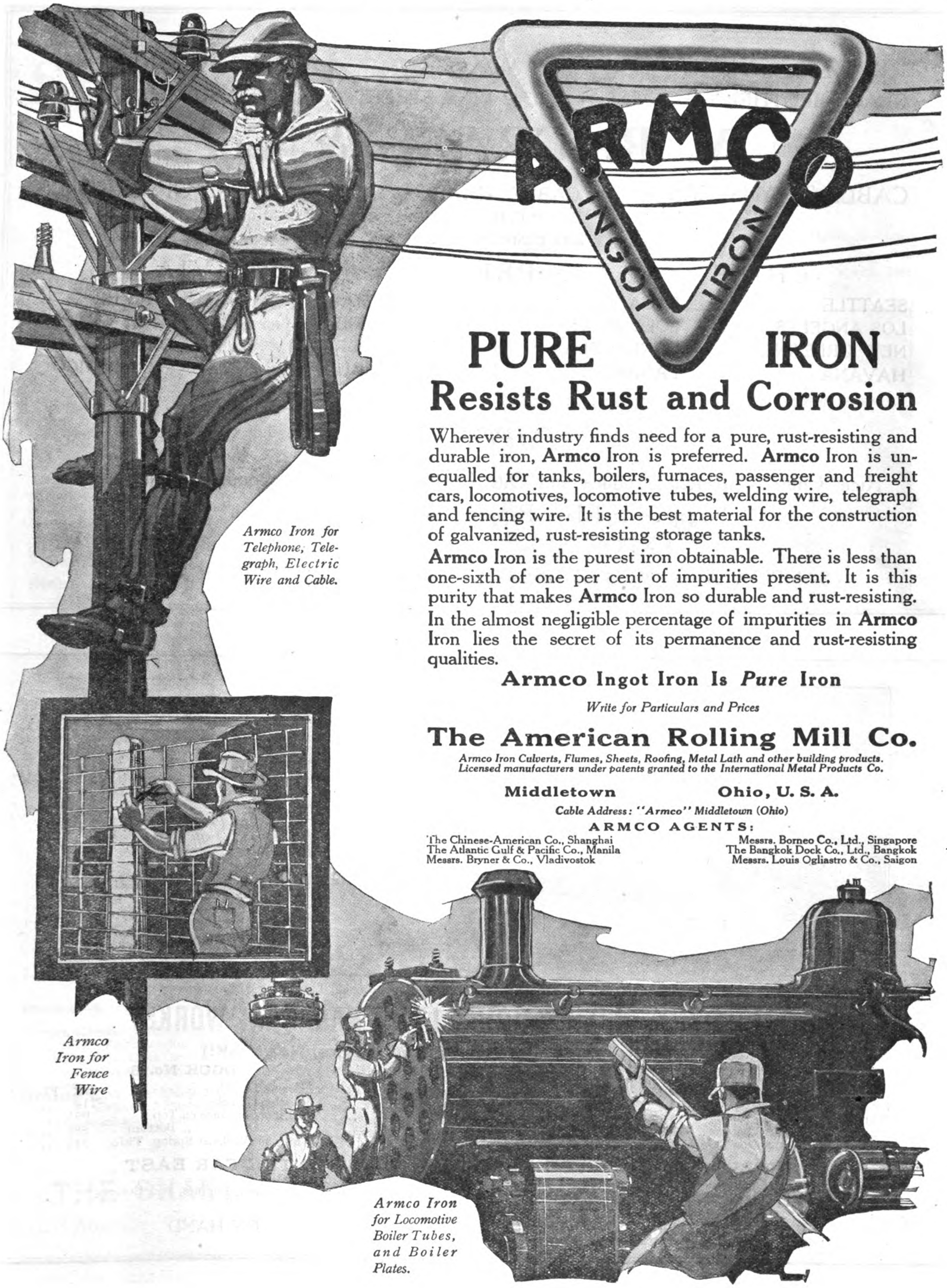
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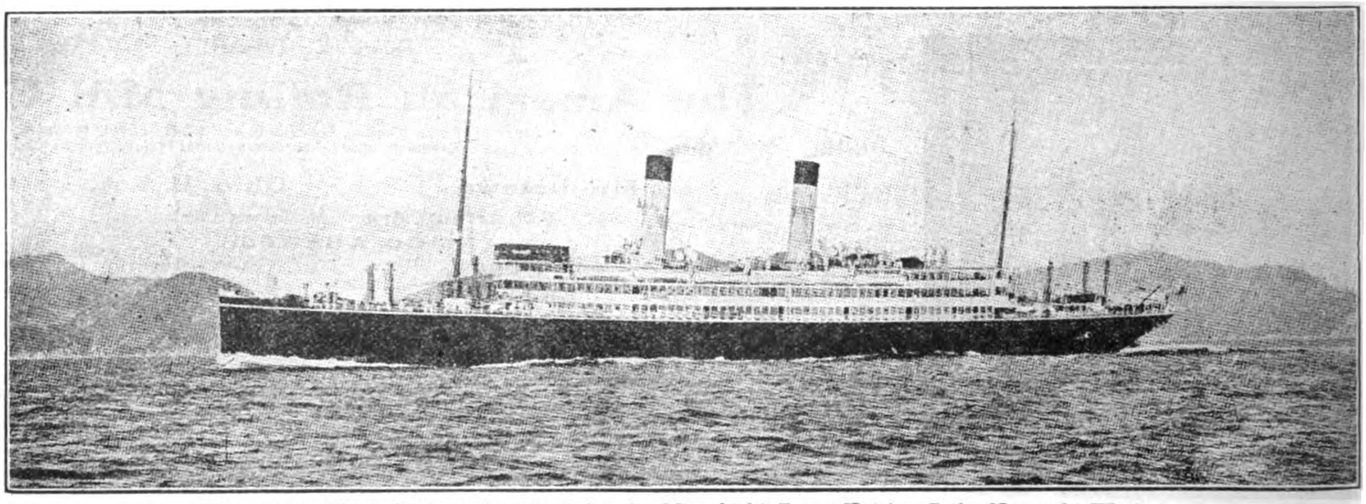

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,, ,, ,, ,, Bottom-	77	,,
Water on Blocks at Spring Tide	26½	,,

DOCK No. 2

Extreme Length - - - - - -	371	Ft.
Length on Blocks - - - - - -	360	,,
Width of Entrance on Top - - -	66	,,
,, ,, ,, ,, Bottom -	53	,,
Water on Blocks at Spring Tide -	22	,,

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Extreme Length - - - - - -	722	Ft.
Length on Blocks - - - - -	714	,,
Width of Entrance on Top - -	99½	,,
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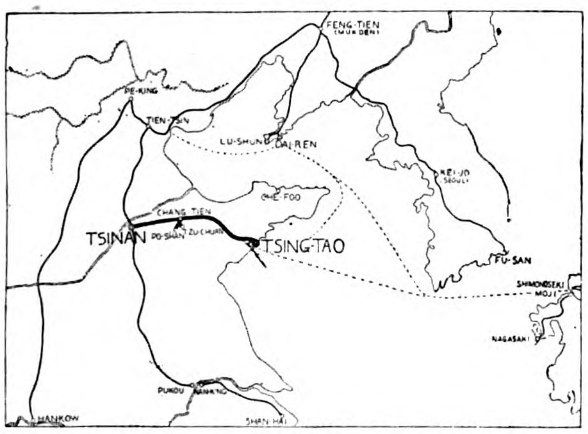


THROUGH TRAFFIC

Through passenger tickets are issued between the following principal stations of the Shantung Railway: Kiaochow, Kaomi, Fangtsu, Weihsien, Chingchow, Changtien, Chowtsun, Tsinan, Tzuchuan, Poshan, and the following points: In Manchuria—Port Arthur, Newchwang, Liaoyang, Fushun, Mukden, Tiehling, Kaiyuan, Changchun, Penchihu, Antung, and Dairen; in Japan—Yokohama, Nagoya, Yokkaichi, Osaka, Kobe, Ujina, Moji, Shimonoseki and Shanghai.

Steamer Connections—Steamers leave the wharves of the Large Harbour, Tsingtao, for Moji and Kobe every five days, for Shanghai about twice a week and for Dairen about three times a week.
For giving facilities to through passengers for Japan, a special train in connection with the night train No. 4 is operated from the Harbour Station to the Wharf, direct alongside the ship, on those days when the liners of the Nippon Yusen Kaisha, Osaka Shosen Kaisha, and Harada S.S. Co. are leaving.
Through passengers and their luggage are carried free of charge for this section.

Collieries—The Tzuchuan (Shisen) and Fangtzu (Boshi) Collieries are managed by the Mining Department of the Shantung Railway.
At present the daily output of Tzuchuan coal is about 1,500 tons, far surpassing the amount taken out when the Germans were in control. The coal is well-known for its good quality and fair price.

Tsinan—Tsinan, the capital of Shantung, is the western terminus of the Shantung Railway, and also one of the most important stations on the Tientsin-Pukow Railway.
The Tsinan Railway Hotel, furnished in modern European style, is found on the upper floor of the Tsinan Station, under the control of the Shantung Railway Administration.

THROUGH TRAIN SERVICE

Train No. 1 leaves Tsingtao daily 8.00 a.m. arrives Tsinan 6.30 p.m.
Train No. 3 leaves Tsingtao daily 7.00 p.m. arrives Tsinan 7.00 a.m.
Train No. 2 leaves Tsinan daily 9.00 a.m. arrives Tsingtao 7.30 p.m.
Train No. 4 leaves Tsinan daily 8.30 p.m. arrives Tsingtao 8.30 a.m.

Local Trains run between Tsingtao and Weihsien, Fangtzu and Tsinan, and on the Poshan and Tzuchuan colliery branches.

Fares—Tsingtao-Tsinan—1st class, $14.30 ; 2nd class, $7.20.

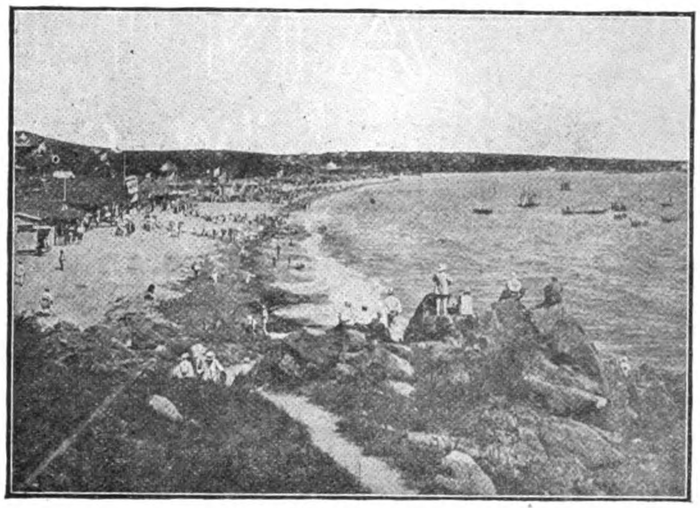
First Class Sleeping Car—A first-class sleeping car is attached to night trains Nos. 3 and 4 running between Tsingtao and Tsinan. For a berth in the sleeping car three yen in silver is charged in addition to the ordinary first-class fare, irrespective of distance.

Dining Car—A dining car is attached to through trains Nos. 1, 2, 3 and 4 running between Tsingtao and Tsinan. Meals are served to order at any time.

Ticket Agencies—The International Sleeping Car and Express Trains Co. and their Agents ; Messrs. Thos. Cook & Son and their branch offices in various parts of the world.

Connections at Tsingtao—By steamer with Japan, Manchuria and Shanghai.

Connections at Tsinan—By Tientsin-Pukow Line with Tientsin, 6.40 a.m. daily, and with Pukow, 8.15 p.m. daily.



BATHING BEACH, TSINGTAO.

Description of Tsingtao

Tsingtao is considered the most healthful place in all the Far East. The scenery including both mountains and sea, is most beautiful. There are quite extensive forest gardens, bits of woodland here and there, and many delightful shady lanes affording most interesting walks through them.

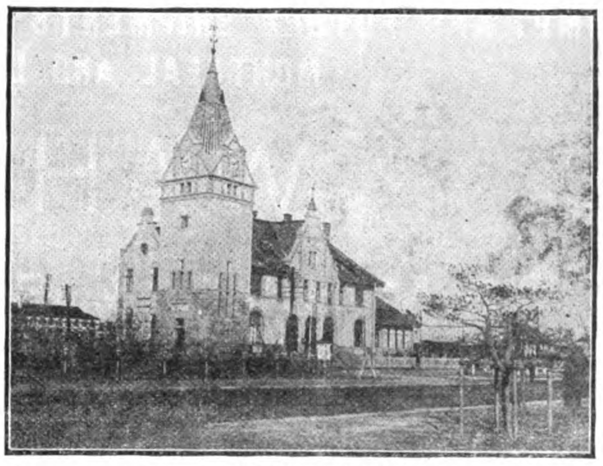
The roads are all broad, with very moderate gradients. They are of both macadamized and asphalt construction for vehicle traffic, while the sidewalks are either paved or concrete. These streets are practically all lined with beautiful shade trees.

The buildings are constructed principally in modern European style, with red tiles and white walls, contrasting pleasantly with the surrounding green mountains and blue sea.

The climate here is fine from Spring to Autumn, being neither too hot nor too cold. These climatic conditions make the place a favourite summer resort for Europeans and Americans from Shanghai, Tientsin, and other places.

The hotels are luxuriously furnished with up-to-date equipment and are under the efficient management of Mr. H. J. Hearne.

The hotel rates are $6.00 and up, per day, on the American plan.



TSINGTAO STATION

For Further Information, please apply to

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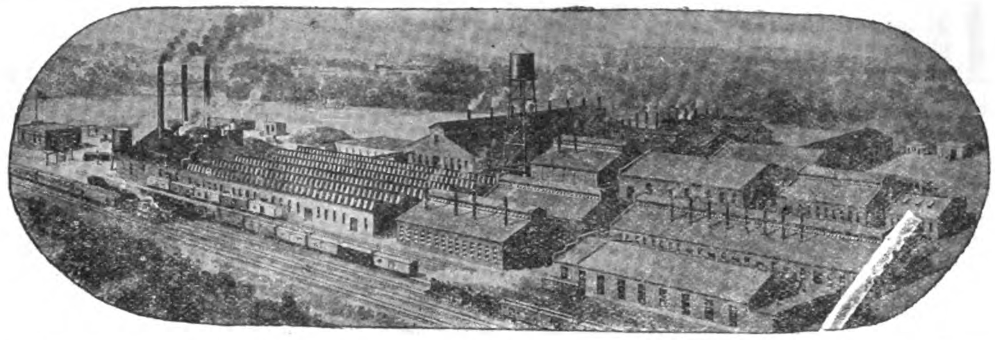

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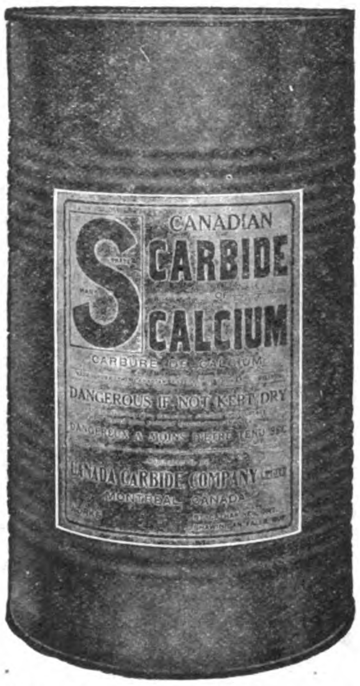

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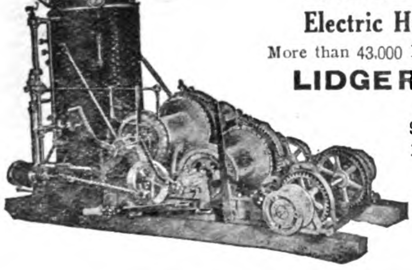

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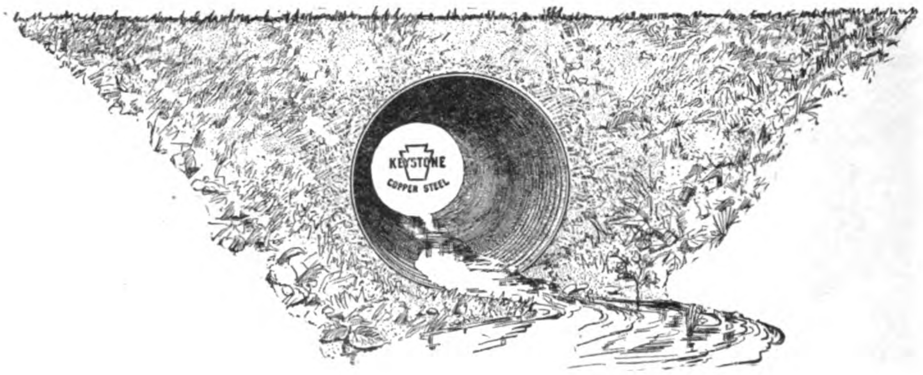

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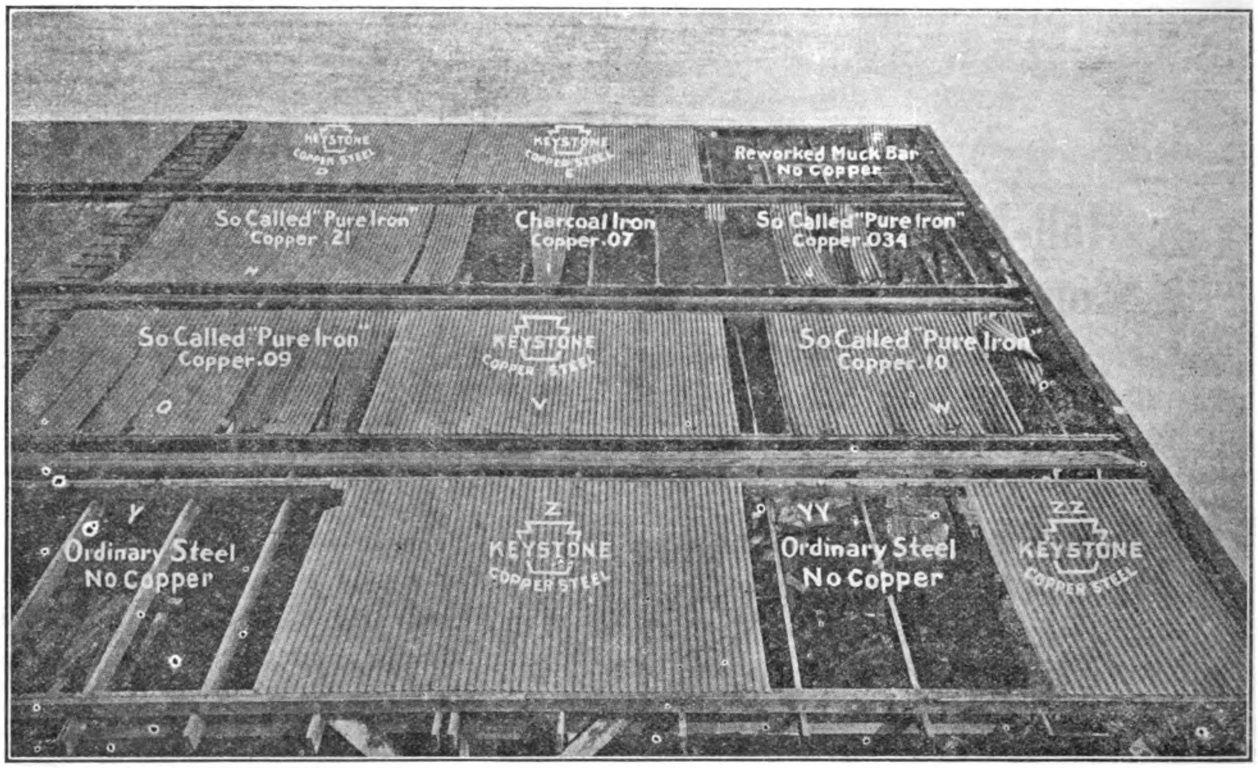
It is well known that different grades and specimens of iron or steel vary considerably in their corrosion resisting properties, and our task was to place upon the market a material which will withstand to the greatest possible extent the corrosive influences of various soils and atmospheres.

APOLLO KEYSTONE COPPER STEEL SHEETS are the product of years of painstaking investigation by the American Sheet and Tinplate Co. How well the problem was solved is illustrated by the following photograph, which shows at a glance, the superiority of Keystone Copper Steel. All the sheets were of the same size and gauge, and were entirely unprotected by paint, galvanizing or other coating. They were placed in the open air on specially constructed roofs where the natural action of the weather during about 1½ years' exposure produced the results shown below.



One of a series of actual service test roofs covered with uncoated black sheets.
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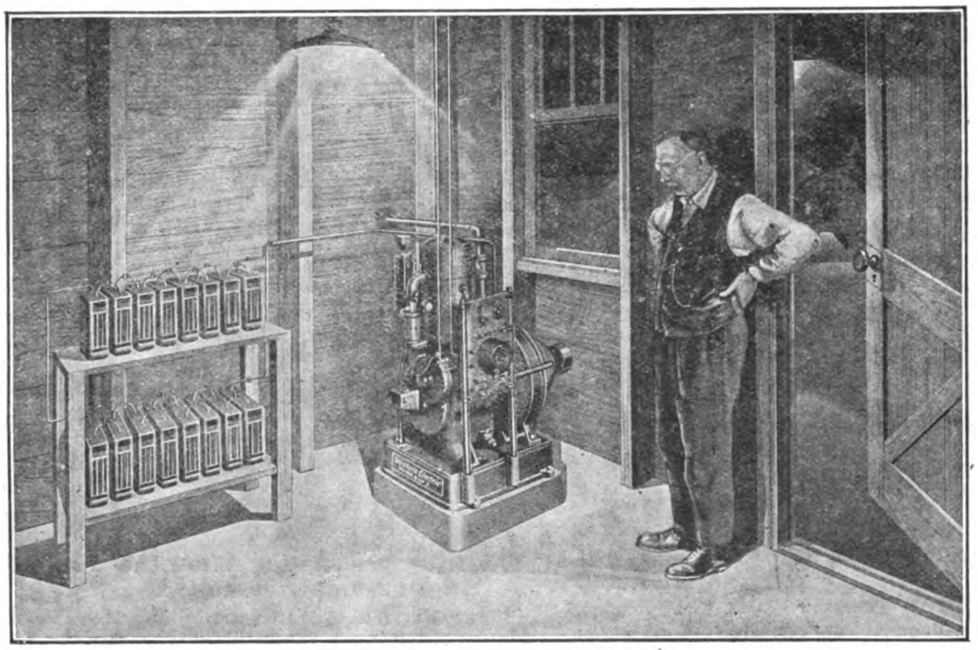

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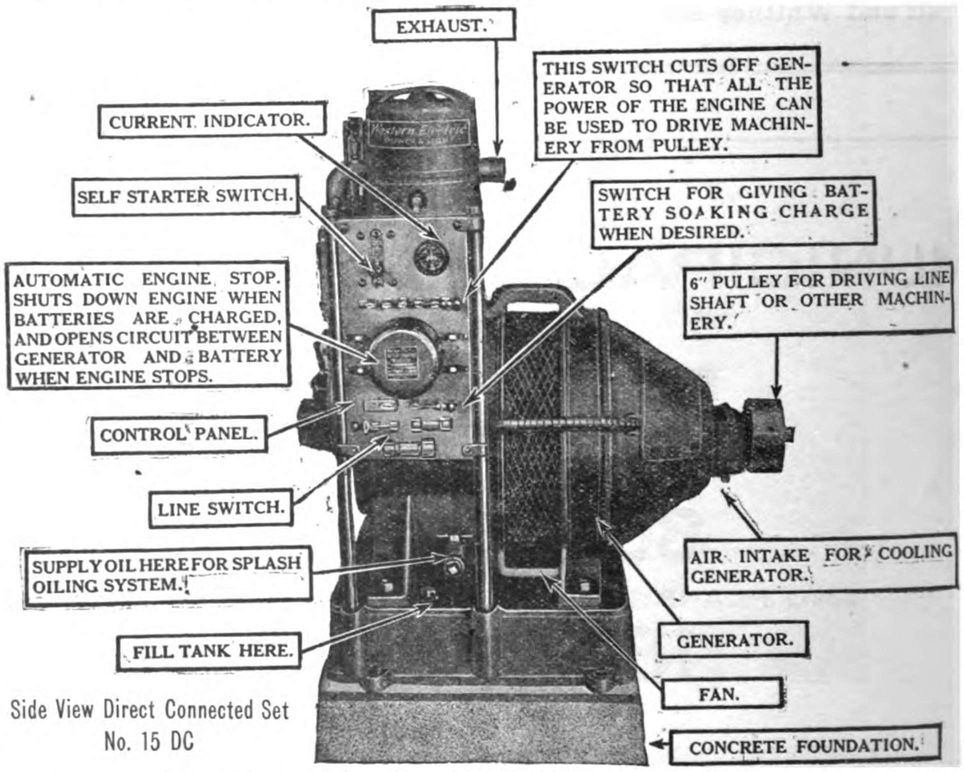

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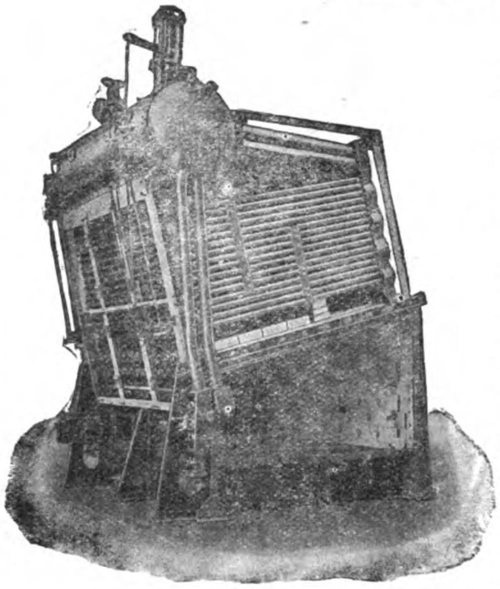

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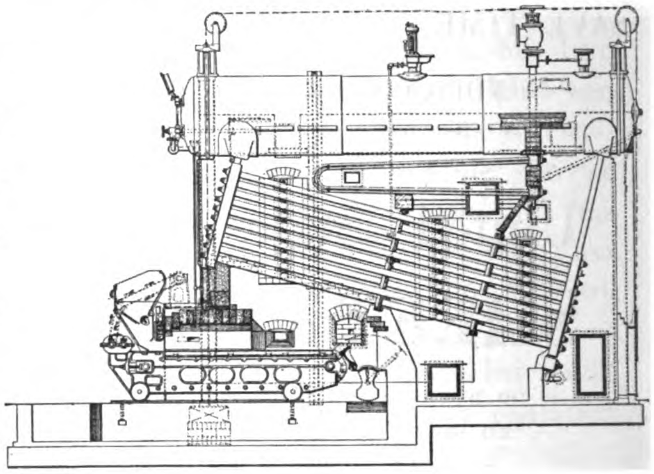

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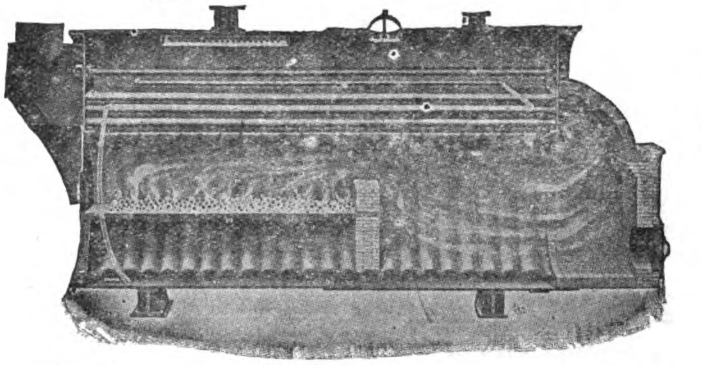

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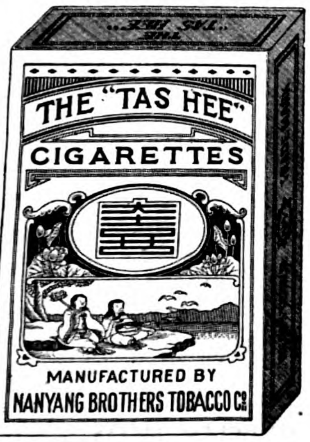

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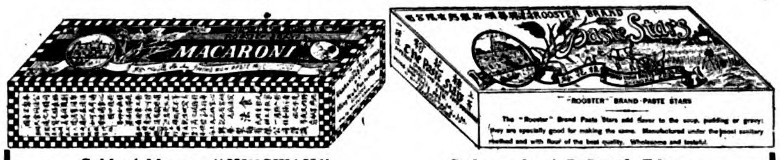

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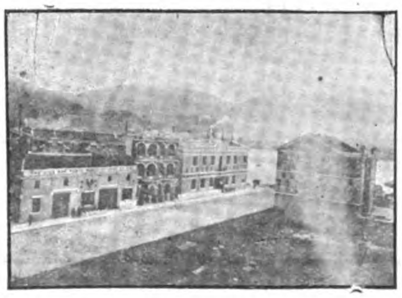

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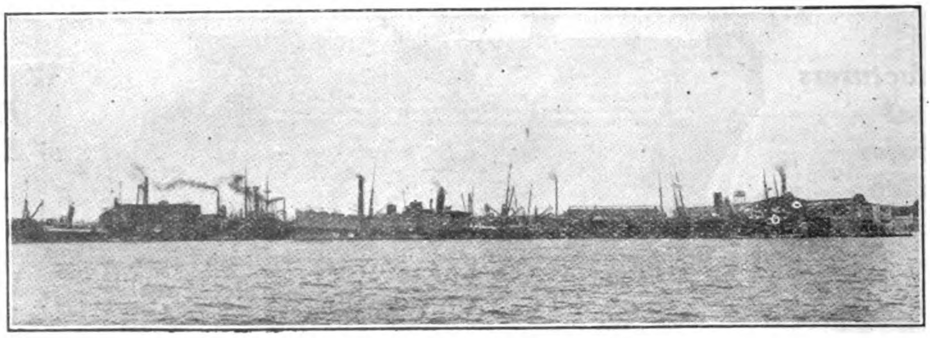

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Showing s.s. *Telamon* (4,509 tons) in Dock and nine vessels undergoing repairs at one time alongside Company's Wharves

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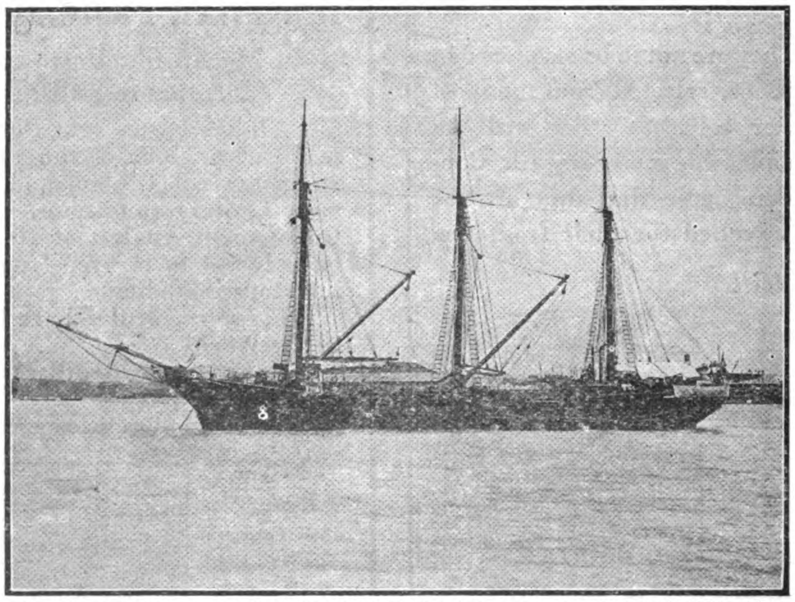

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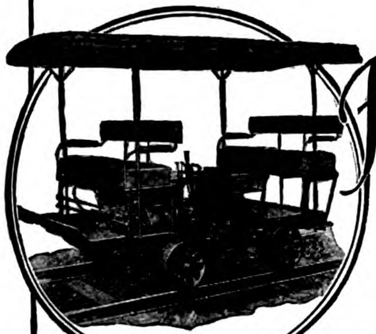

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Seven Passengers

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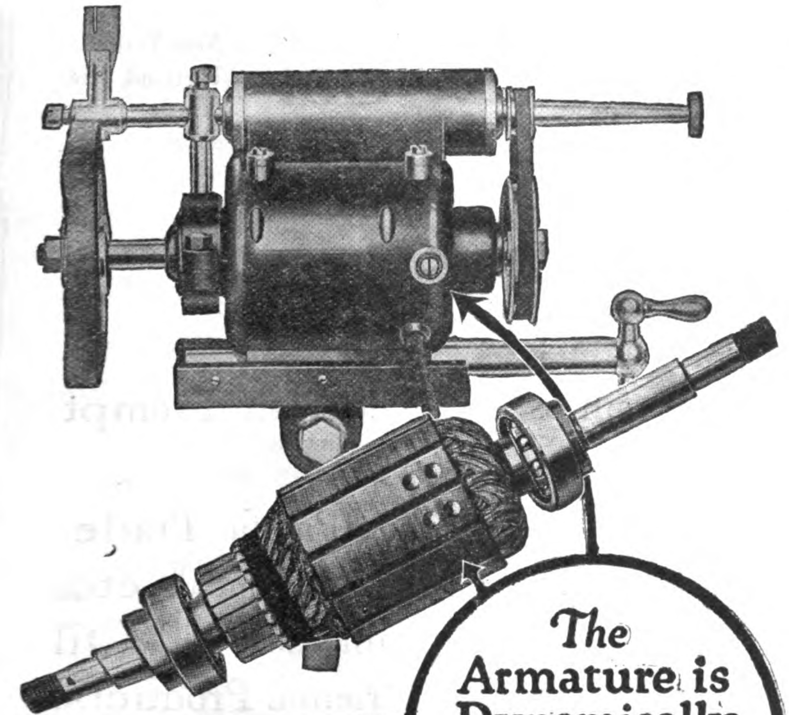

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Equipped with Dust-proof Ball Bearings

Equipment B — For deep internal grinding. Has a reach of ten inches and a speed of 10,000 R.P.M. The extension arm is interchangeable with the high speed internal attachment.

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ELEVATED STEEL TANKS *for* Locomotive Service

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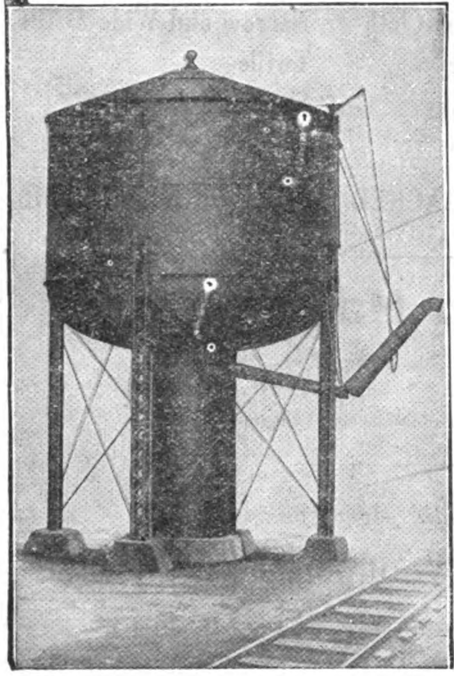

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Responsible firms are invited to communicate with us in view of representing our interests in Shanghai, Manila and all important cities of the Far East.

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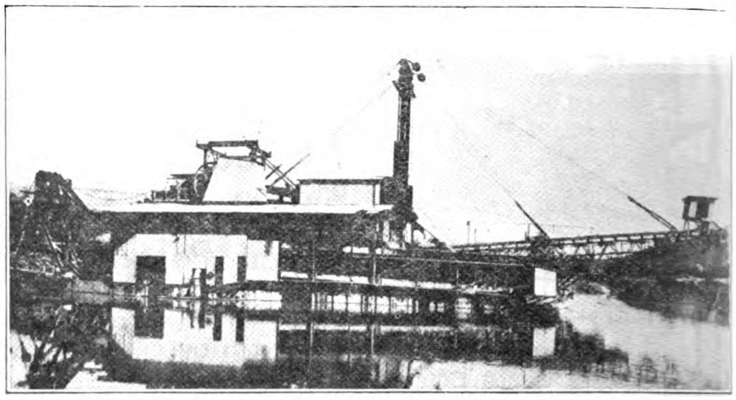

7 cu. ft. Dredge for Tin Bentong No Liability Melbourne now at work in Federated Malay States.

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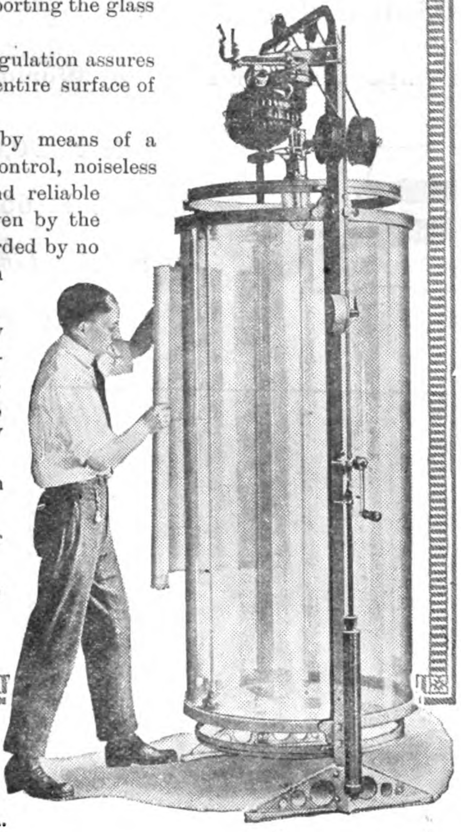

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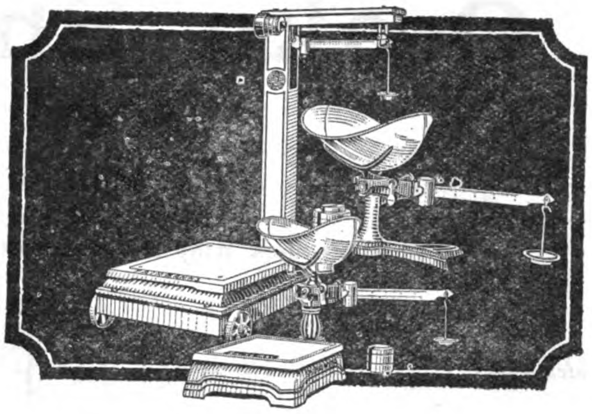

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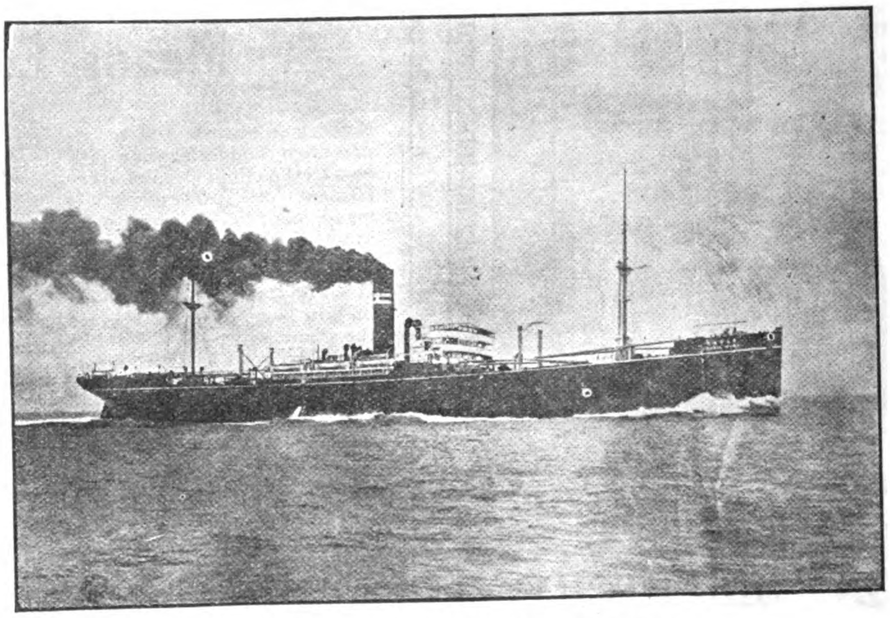

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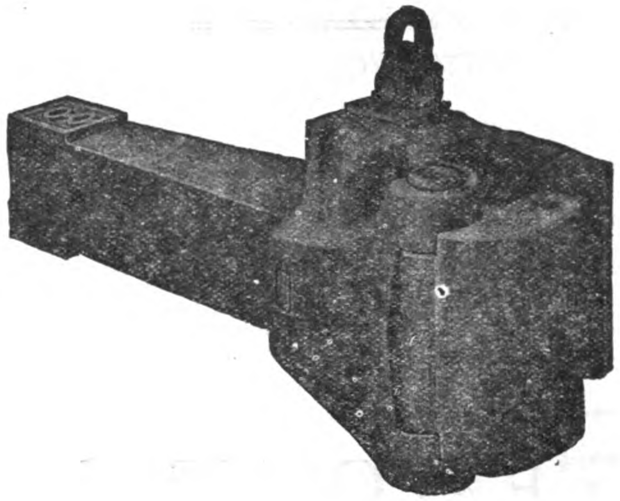

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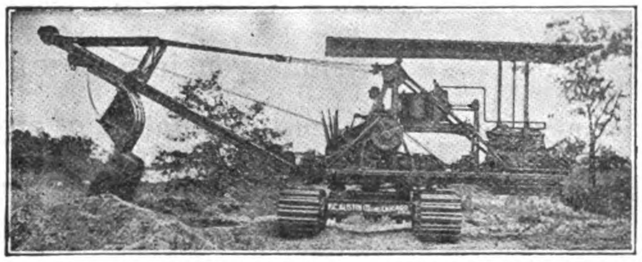

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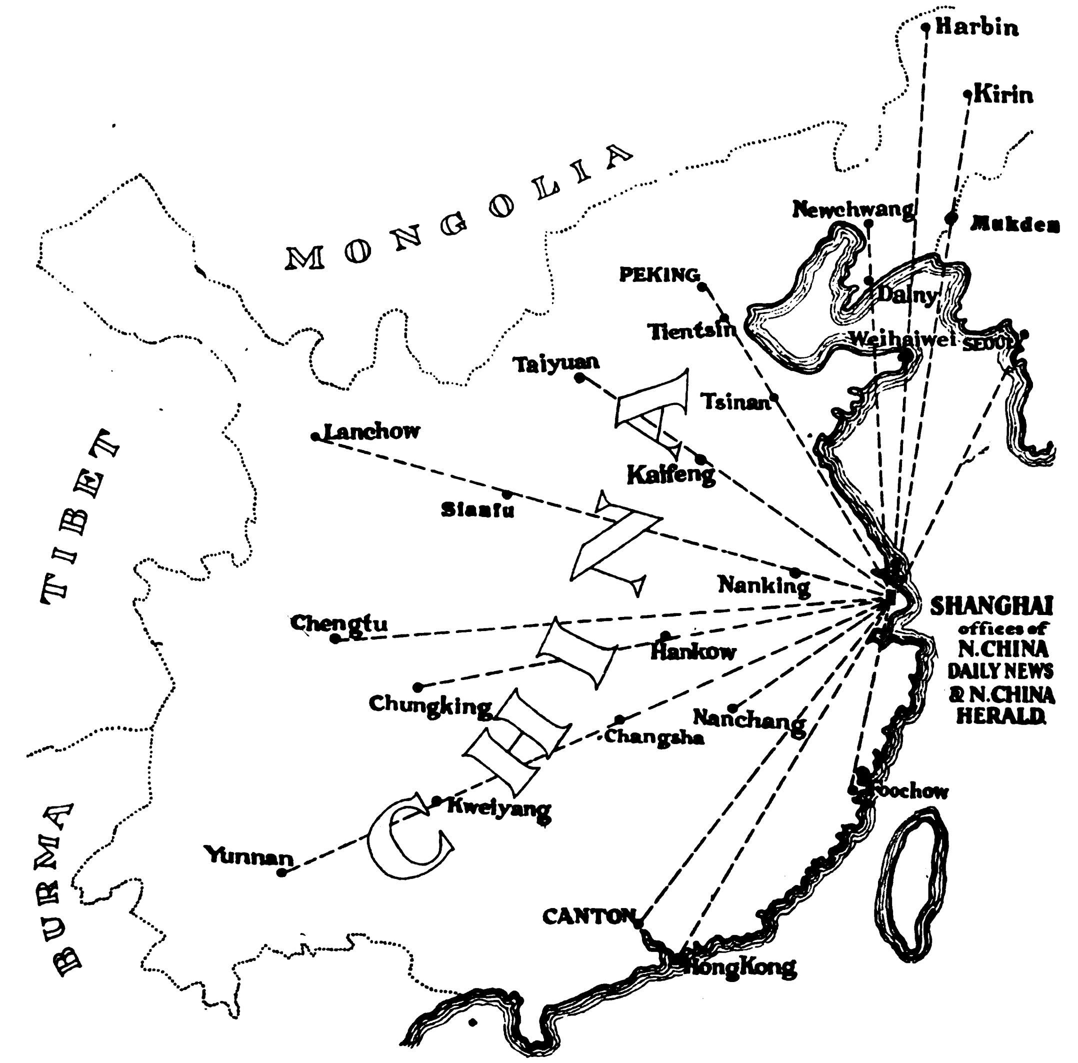

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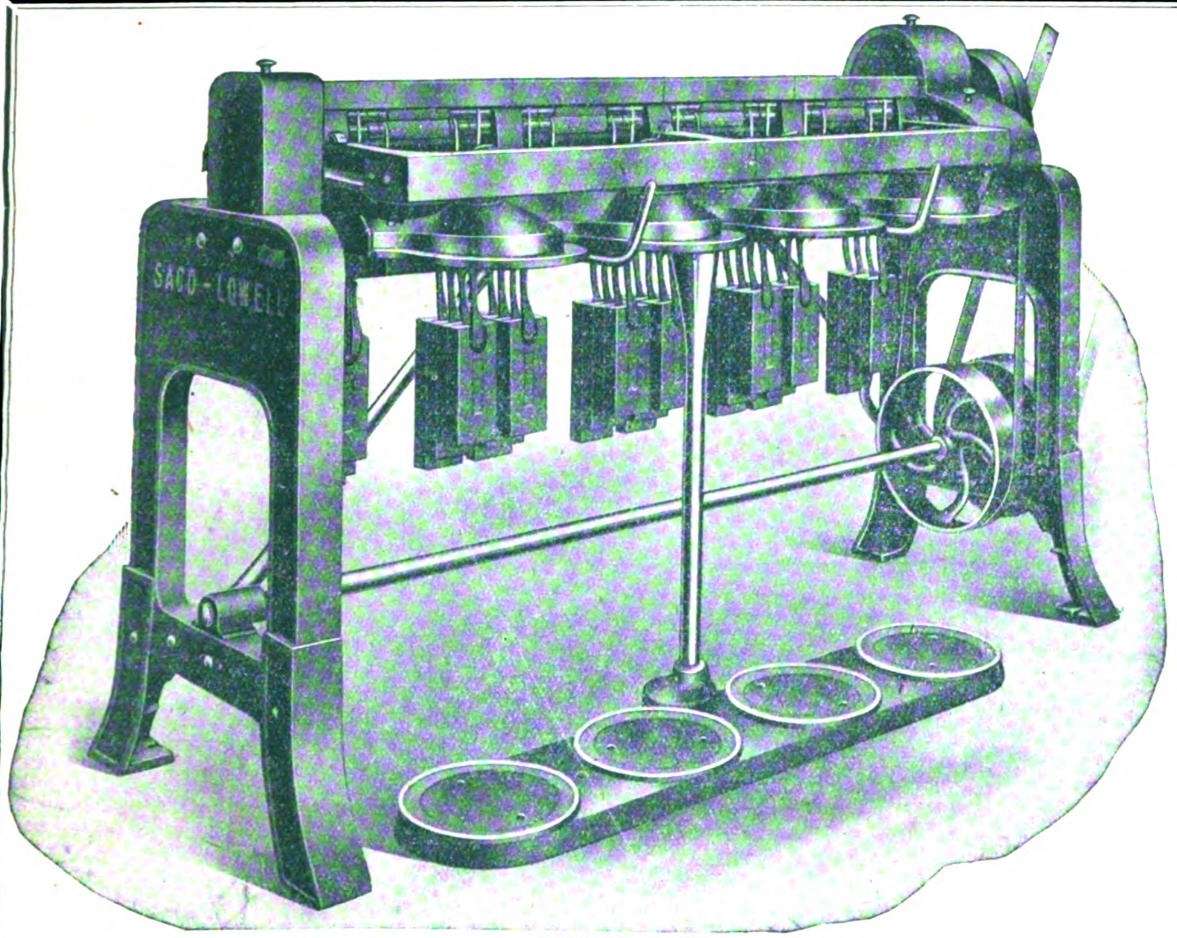

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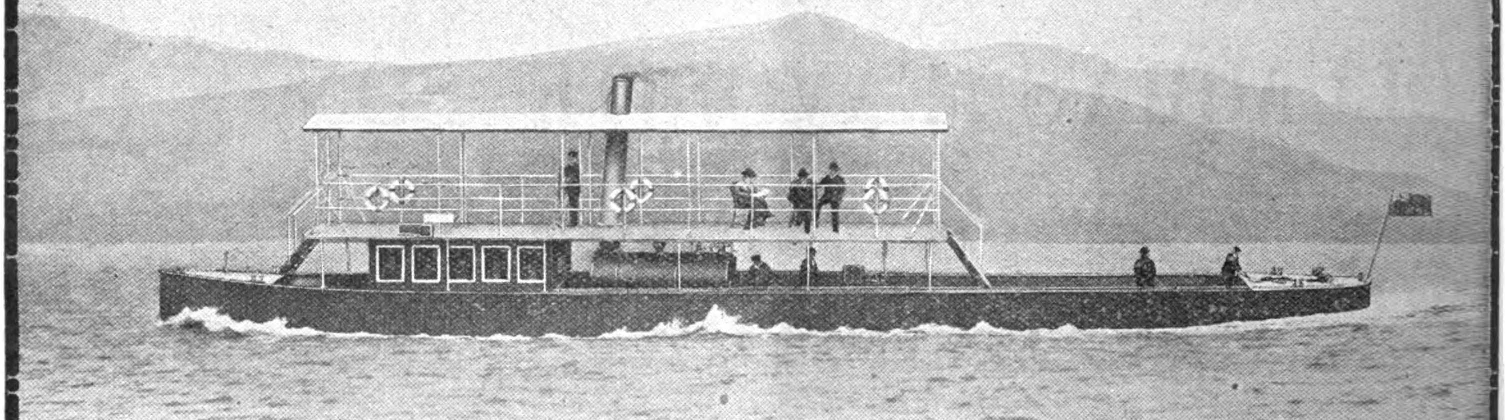

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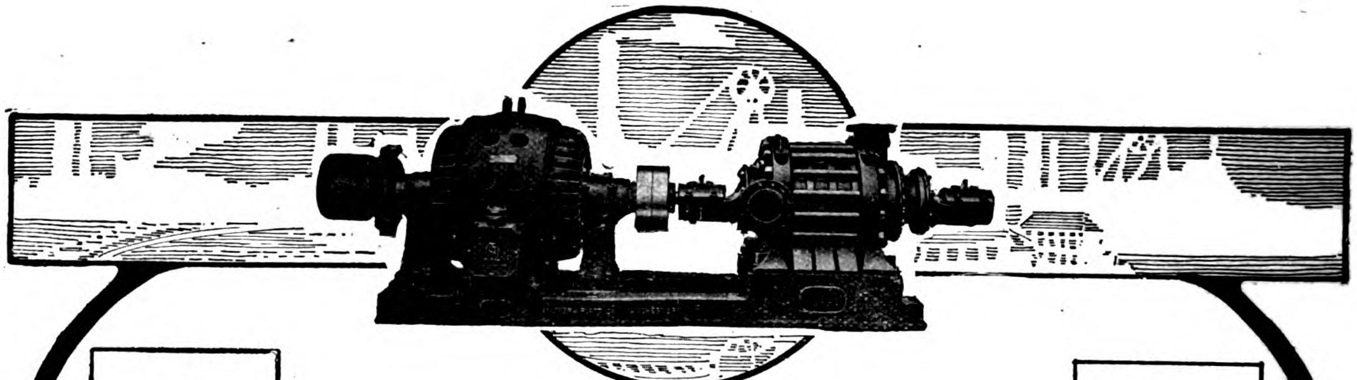

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CHINA

China (Chung Kuo) comprises China Proper (eighteen provinces), Manchuria, Mongolia, Sinkiang and Tibet.

Area and Population.—Accurate figures of area and population are impossible to secure. It is generally accepted that the total area is between 4,278,352 and 4,376,000 square miles. The area of China Proper—that is, the provinces of Chihli, Shantung, Shansi, Shensi, Honan, Kiangsu, Kiangsi, Anhwei, Chekiang, Fukien, Hupeh, Hunan, Kansu, Szechuan, Kuangtung, Kuangsi, Kweichow and Yunnan—is set down at 1,532,815 square miles. Its length from north to south is 1,860 miles, and its breadth 1,520 miles.

The estimated population of China Proper ranges from 271,770,000 (331,000,000 is the Mingchengpu census of 1910) to 407,253,029. The generally accepted figure is that of the Mingchengpu census. The total population for the whole of China is estimated at between 342.6 millions and 448,000,000.

The Foreign Population in 1918, according to Customs reports, was as follows: American, 5,766; Austrian, 271; Belgian, 360; Brazilian, 16; British, 7,953; Danish, 475; Dutch, 377; French (including 918 proteges), 2,580; German, 2,651; Hungarian, 7; Italian, 535; Japanese, 159,950; Norwegian, 279; Portuguese, 2,417; Russian, 59,719; Spanish, 298; Swedish, 530; Non-treaty Powers, 343; total, 244,527. The figures of German and Austrian population in 1918 were greatly reduced by repatriation in 1919.

Government.—The Government of the eighteen provinces is entrusted to civil and military Governors, and under them each province is subdivided into circuits superintended by Taoyins or intendants, and again into districts. All the territorial officials are appointed by the Central Government, and the Provincial Governors, though free to act independently in many matters of local detail and finance, are responsible to the Central Government at Peking in all important questions, and especially in foreign affairs.

The Army.—The total strength in all forces after the rebellion in 1913 was estimated at 600,000. As various commanders recruit to suit their own purposes no accurate figures are available, but at the end of 1917 it is probable that 800,000 men were under arms.

The Navy.—This arm of the defense is out of date. China possesses two protected cruisers built in 1911 (2,756 tons), four older protected cruisers (4,300-3,000 tons), three torpedo gunboats (850 tons), eleven gunboats (750-550 tons), four destroyers (400 tons), and eight small torpedo boats (120 tons).

Currency.—The standard currency in China is silver, its unit being the Tael, which is not a coin but a weight, its value varying considerably. In 1882, in Shanghai, the tael was worth 5s. 2d.; in 1892 the Haikwan Tael (the official Customs Tael) was worth 4s. $4\frac{1}{2}$d.; in 1907, 3s. 3d.; in 1917, 4s. $3\frac{13}{16}$d.; in 1918, 5s. $3\frac{7}{16}$d. Various silver dollars circulate, as well as copper cents, while cash is greatly used among the poorer classes and country people. The cash should weigh one-tenth of a tael and have the value of 1,000 cash to a silver tael, but this standard is never maintained. In 1882 a Shanghai tael (5s. 2d.) was equal to 1,690 cash, and in 1902 when the tael was worth 2s. $7\frac{5}{8}$d. it was equal to 1,240 cash.

Foreign Trade of China.—In 1918 the net value of foreign trade of China was the highest on record, the total being Hk. Tls. 1,040,776,113, an increase of Hk. Tls. 28,325,709 over that for 1917. Net imports of Hk. Tls. 554,893,082 compared with Hk. Tls. 549,518,774 in 1917; and exports of Hk. Tls. 485,883,031 compared with Hk. Tls. 462,931,630 in 1917.

Treaty Ports, Trading Ports, and Ports of Call.—There are forty-eight treaty ports in China, which are classified by the Chinese Maritime Customs as follows:

Northern Ports: Aigun, Sansing, Manchouli, Harbin, Suifenho, Hunchun, Lungchingtsun, Antung, Tatungkow, Dairen, Newchwang, Chinwangtao, Tientsin, Lungkow, Chefoo and Kiaochow.

Yangtze Ports: Chungking, Ichang, Shasi, Changsha, Yochow, Hankow, Kiukiang, Wuhu, Nanking and Chinkiang.

Central Ports: Shanghai, Soochow, Hangchow, Ningpo and Wenchow.

Southern Ports: Santuao, Foochow, Amoy, Swatow, Canton, Kowloon, Kongmoon, Samshui, Lappa, Wuchow, Nanning, Kiungchow and Pakhoi.

Frontier Ports: Lungchow, Mengtze, Szemao and Tengyueh.

Ports Opened to Trade are: In *Manchuria*: Mukden, Fakumen, Fenghwangcheng, Sinminfu, Teihling, Tungkiangtze, Yingkow (Newchwang), Liaoyang, Changchun, Kirin, Ninguta, Chuizuchien, Toutaokow, Tsitsihar, Hailar. In *Sinkiang*: Kashgar. In *Shantung*: Chow'sun, Tsinanfu, Weihaiwei, Weihsien. In *Kiangsu*: Woosung. In *Tibet*: Gartok and Gyangtze.

Ports of Call: For Passengers and Cargo: In *Kuangtung*—Kumchuk, Shuihsing, Pakto, Takhing, Lating, Dosing. In *Kiangsi*—Hankow. In *Anhwei*—Tatung, Anking. In *Hupeh*—Wusueh and Luk'kow.

For Passengers: In *Kiangsu*—Kiangyin, Icheng. In *Hupeh*—Hwangshihkang, Hwangchow. In *Kuangtung*—Fengtsun, Kaukong, Yutshing, Lukpa, Howlik, Loto, Maning, Yungyan, Kulo and Jungki.

Railways.—

Government railways in operation	3,793 miles
Concessioned railways in operation	1,847 „
Private railways in operation	150 „
Total railways in operation	5,790 miles

Government railways under construction are about 330 miles.

Weights and Measures.—1 TAEL (*Liang*) = 583.3 grains ($1\frac{1}{3}$-oz. avoirdupois) = 37.783 grams.

16 Taels = 1 CATTY (*Chin*) = $1\frac{1}{3}$-lb. avoirdupois = 604.53 grams.

100 Catties = 1 PICUL (*Tan*) = $133\frac{1}{3}$-lb. avoirdupois = 60.453 kilograms = 147.67 Russian pounds.

Length: 1 Chih = 14.1 inches or 0,358 meters.

1 Li = about one-third of a mile (or theoretically 2,115 feet, or two-fifths of a mile).

Area: 1 Mow (Shanghai) = one-sixth of an English acre.

Capacity: 1 Tow (for tribute) = 629 cubic inches (10.31 liters).

Rivers.—The Yangtze-kiang is 3,200 miles in length. It rises in Tibet and drains some three-quarters of a million square miles of country. It is navigable for large steamers to Hankow (600 miles from the sea), for slightly smaller vessels to Ichang (1,000 miles), for small steamers and steam launches for 300 miles farther, and for junks for 200 miles farther; or a total distance of half its length is available for the transport of merchandise. The river was opened to foreign trade by the Treaty of Tientsin (1858).

The Yellow River, or Huang-ho, rises about 100 miles from the source of the Yangtze. It is from 2,500 to 2,700 miles long, but is navigable only by junks, the vast quantities of silt carried by it and deposited in its channel rendering steam navigation impossible.

The Sikiang, or West River, rises in Yunnan and reaches the sea by several months near Canton. Its length is about 1,000 miles. Steamers go as far as Wuchow, some 220 miles from Canton and launches some 200 miles farther. Junks navigate it to near its source.

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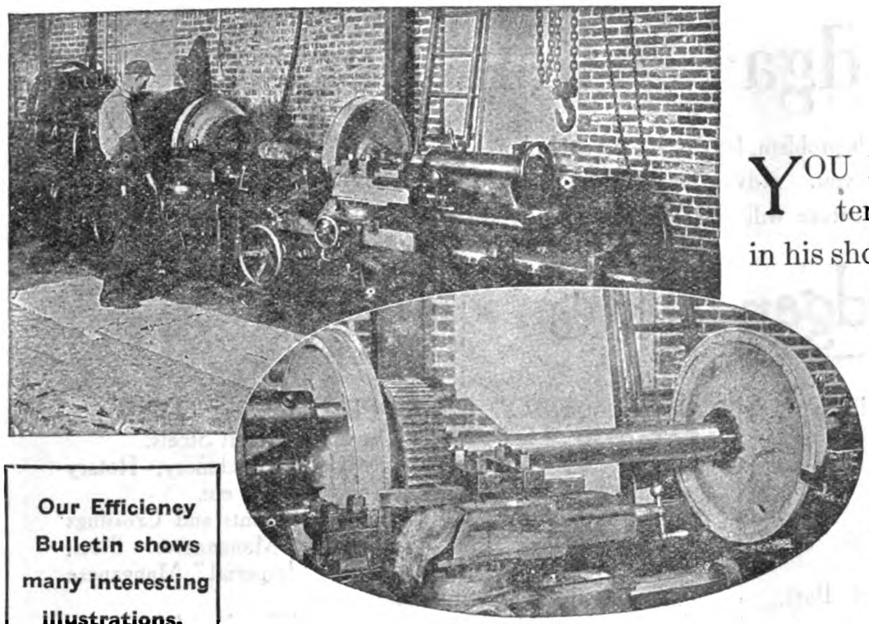

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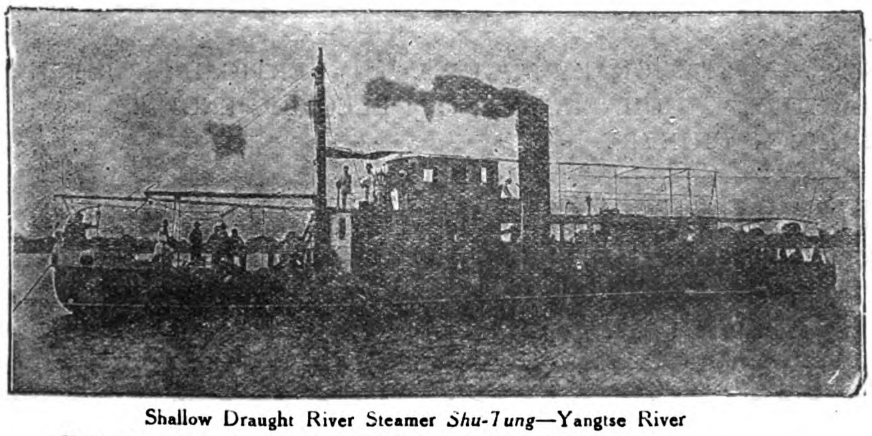

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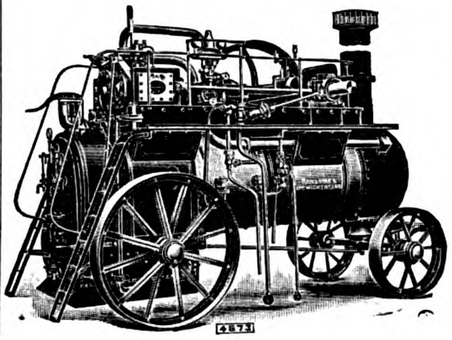

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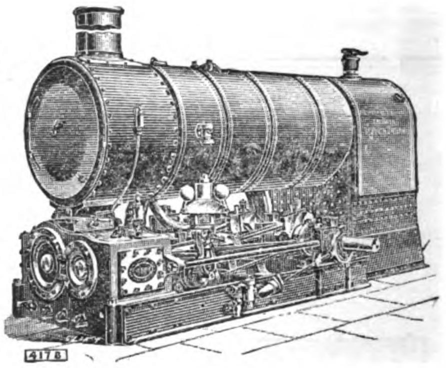

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In London: London City & Midland Bank Ltd.
In New York: Redmond & Co.
In Italy: Banca Commerciale Italiana Credito Italiano

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Interest allowed on Current Accounts in Gold or Local Currency and fixed deposits on application.
Every description of Banking and Exchange business transacted.
Savings accounts in Gold and Local Currency.

RUSSO-ASIATIC BANK

CAPITAL (fully paid)	**Roubles 55,000,000**
RESERVE FUND	**,, 26,960,000**
Capital contributed by the Chinese Government ...	**Kuping Tls. 3,500,000**
Reserve Fund	**,, 1,750,000**

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Paris Office: 9 RUE BOUDREAU
London Office: 64 OLD BROAD STREET, E.C. 2.

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LONDON: Messrs. Glyn, Mills, Currie & Co.
PARIS: Société Générale pour favoriser le développement du Commerce et de l'Industrie en France.
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LYONS: Société Générale pour favoriser le développement du Commerce et de l'Industrie en France.
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(Specially authorised by Presidential Mandates of April 7th, 1914 and October 31st, 1915 making the Bank of Communications a National Bank).

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CAPITAL . . Kuping Tls. 10,000,000

President: TSAO JOU LIN

Vice-President: JEN FUNG PAO

Every description of Banking and Exchange business transacted.
Interest allowed on Current Accounts and Fixed Deposits according to arrangement.
Credits granted on approved Securities.
Special Facilities for Transfers to all parts of China.

Branches

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HONAN PROVINCE.—Kaifeng, Lohyang, Chengchow, Chiaotso, Chowchiakow, Taokow, Leiho, Hsinhsiang, Changtefu, Hsinyangchow.

SHANSI PROVINCE.—Shihchiachwang, Tatungfu, Fengcheng, Yangkao.

KIANGSU PROVINCE.—Shanghai, Soochow, Wusieh, Chinkiang, Yangchow, Tsing-kiangpu, Pukow, Penpu, Hsuchow.

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KIANGSI PROVINCE.—Kiukiang.

HUNAN PROVINCE.—Changsha, Changteh, Yochow, Hengchow, Hsiangtan.

SZECHUAN PROVINCE.—Chungking.

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KWANGTUNG PROVINCE.—Canton.

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ABROAD.—Hongkong, Singapore.

The Yokohama Specie Bank, Limited

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Vice-President:
S. K. SUZUKI, Esq.

Directors:
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N. Soma, Esq.
Y. Yamakawa, Esq.
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S. K. Suzuki, Esq.
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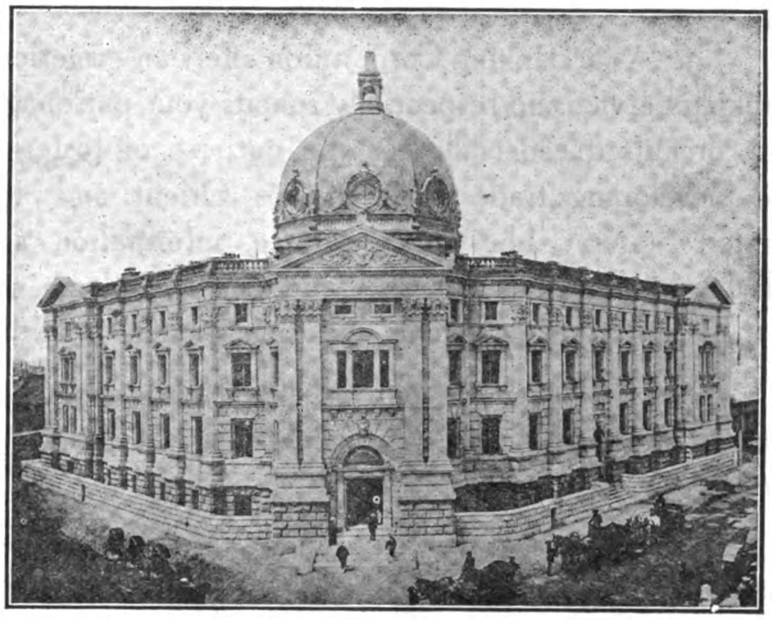

General Manager:
S. K. Suzuki, Esq.

HEAD OFFICE, YOKOHAMA

Manager:
Taro Hodsumi, Esq.

SHANGHAI BRANCH

31 The Bund.

Director and Manager:
K. Kodama, Esq.

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Harbin
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Honolulu
Kaiyuang
Kobe
London
Los Angeles (sub-office of San Francisco Branch)
Lyons
Manila
Nagasaki
Newchwang
New York
Osaka
Peking
Rangoon
Rio de Janeiro
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Tsingtau
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LONDON PROVINCIAL & UNION BANK OF ENGLAND LTD.
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Every description of Banking business transacted. For particulars, apply to the Managers.

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An American Bank

The Asia Banking Corporation offers an American Banking Service and respectfully solicits your patronage. It is organised especially for the purpose of fostering and developing trade between the Orient and the United States. The entire service, information and TIME of our bank, its staff and correspondents are at the disposal of our clients and their friends.

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DOMINICAN REPUBLIC—S. Domingo, Puerto Plata, Sanchez, S. Pedro de Macoris and Santiago de los Caballeros.

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TOTAL RESOURCES OVER - - $500,000,000

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Paid-up Capital - $2,000,000.00

DIRECTORS: 董事局

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Kan Ying Po	簡英甫	Chan Ching Shek	陳澄石
Li Koon Chun	李冠春	Wong Yun Tong	黃潤棠
Chan Kai Ming	陳啓明	Fung Ping Shan	馮平山
Ng Chang Luk	吳增祿	P. K. Kwok	郭幼廷

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Li Tse Fong, *Asst. Manager.* 李子方

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For 3 months @ 3% per annum
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„ 12 „ 5% „

KAN TONG PO, *Chief Manager.*

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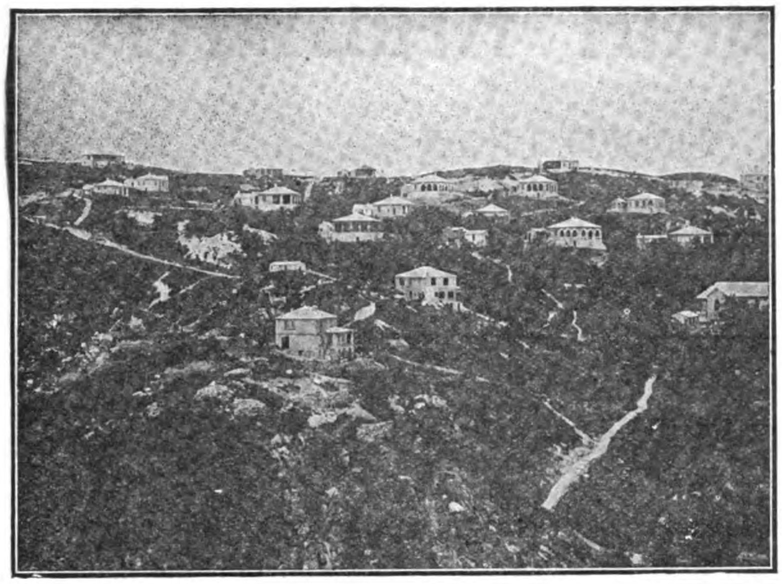
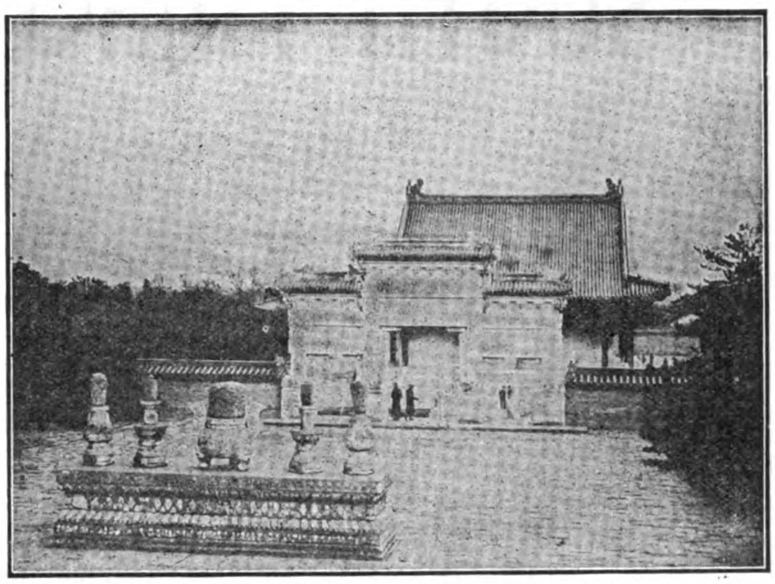
CHINESE GOVERNMENT RAILWAYS



SUMMER RESORT AT CHI KUNG SHAN



TOMB OF EMPEROR YU CHENG NEAR LIANG KOW CHWANG

PEKING-HANKOW LINE

"The Road Through The Heart of China"

THE Peking-Hankow Line, the most important section of China's overland route, enables tourists and travellers to get a glimpse of Old China, the train passing through magnificent scenery, traversing the great plains of Chihli, the central portion of Honan and the mountainous regions of the eastern Hupeh province.

The Peking-Hankow route joins at Fengtai the main line of the Peking-Mukden Railway, by means of which this line is connected with the railways in Manchuria, Korea, Japan, and Siberia, while steamer facilities at Hankow bring it into easy communications with the Yangtze River ports and Shanghai.

From the Capital to Hankow the journey occupies 34 hours, by the daily through train which is provided with up-to-date sleeping and dining accommodations.

Chikungshan Mountain (Summer Resort).—Not many Summer Resorts in China inland, can bear comparison with the natural charming views, that reward those who ascend the mountain of Chikungshan, whose summit stands at an altitude of 1,980 ft. On reaching Sintien station, situated 110 miles from Hankow, a serpentine road climbs the mountain, on top of which are hundreds of beautiful bungalows awaiting vacationists, This popular resort is celebrated for its scenery, where an almost unbroken communion with nature can be enjoyed for a week at a time.

Hsi-ling or Western Imperial Tombs.—With their present-day accessibility, there is now little excuse for visitors to Peking omitting a trip to the Western Imperial Tombs, undoubtedly one of the most impressive sights in China. The site of these beautifully adorned Imperial Tombs is close to Liang Ko Chwang station, 79 miles from Peking, which is reached by a Branch-line, formerly built for the exclusive use of the Imperial Sovereigns when visiting the Tombs of their ancestors. The Western Tombs include the mausoleums of four Manchu Emperors and three Empresses, as well as those of a number of Princesses. The region, as a well laid-out park, closely wooded, is justly appreciated for the charming scenery surrounding the Imperial Tombs and is highly recommended to any one in search of the extraordinary and beautiful.

For Particulars, Pamphlets, Tickets, etc., apply to the "Information Bureau" at Peking Head Office or to Tourist Agencies.

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The Chosen and Manchuria Lines are under the management of the South Manchuria Railway Company. Express trains have been temporarily suspended (except between Fusan and Seoul), but the Ordinary Trains are equal to most American Trains, run at least three times a day from each end, and to some of them Sleeping and Dining Cars are attached. Sleeping berths should be reserved in advance.

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From Dairen there are frequent and regular steamers to and from Shanghai, Tsingtao, Tientsin, etc.

For pictorial guide-books, pamphlets, and further particulars, apply to the Tourist and Ticket Agencies, or direct to the

SOUTH MANCHURIA RAILWAY COMPANY

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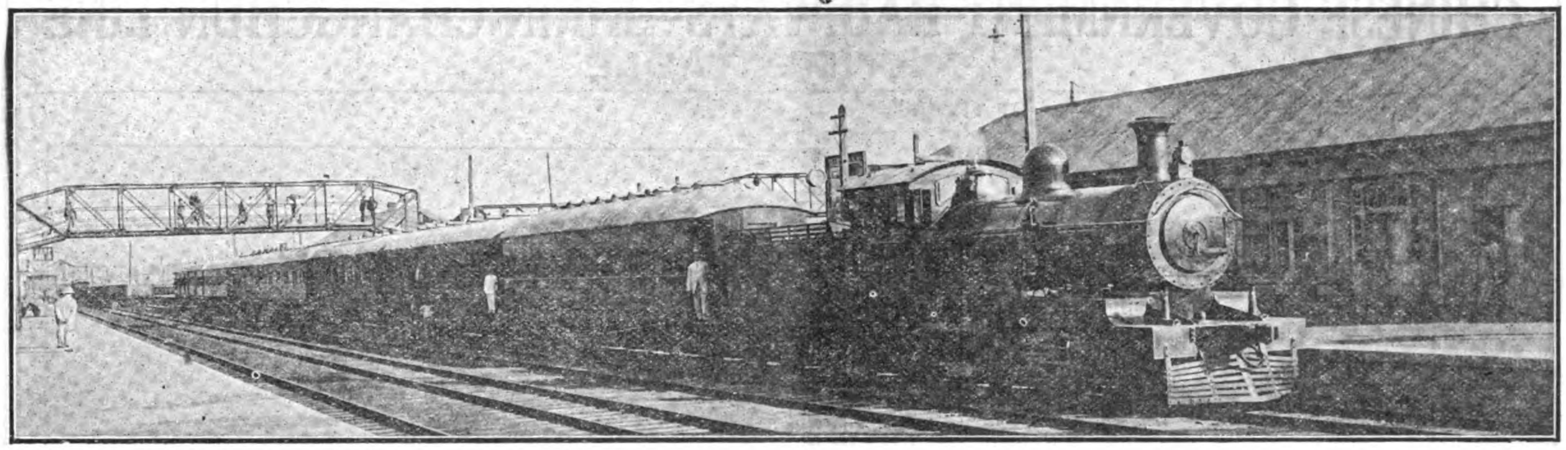
CHINESE GOVERNMENT RAILWAYS



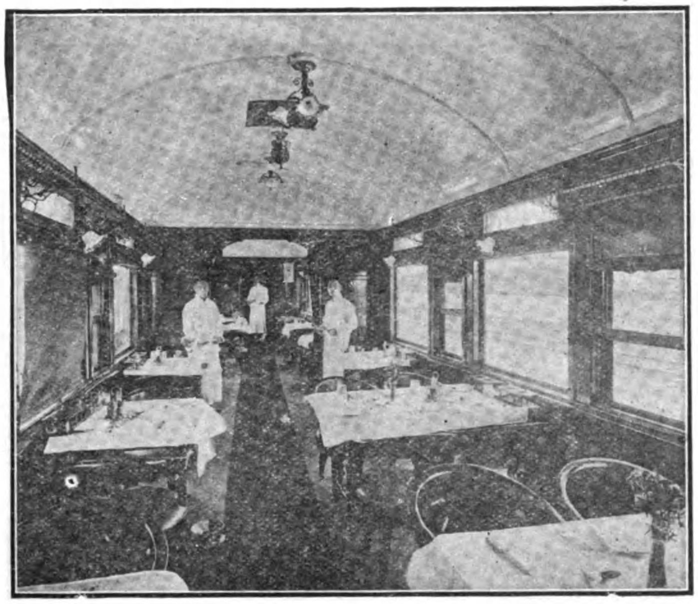
TRAIN DE LUXE AT TIENTSIN EAST STATION

The Peking-Mukden Line

Through service from Peking to Mukden, connecting at Mukden with the South Manchuria Express from Trans-Siberian Route. At Peking connection is made with the Peking-Hankow Railway for Hankow and Yangtze Ports, and Intermediate Points reached by the Chen-Tai Line to Taiyuanfu, the Tao-Ching Line, and the Pienlo Railway to Kaifengfu and Honanfu. Connection is also made at Peking with the picturesque Kalgan Line, "The road to the Great Wall." At Tientsin (Central) connection is also made with the Tientsin-Pukow line for Tsinanfu and Shanghai.

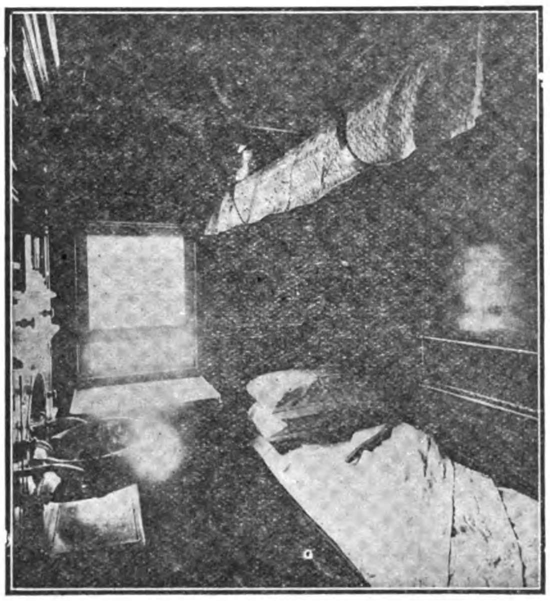
THE RAILWAYS OF NORTH CHINA PASS THROUGH THE MOST INTERESTING PART OF CHINA

PEKING.—The Capital, with the Walls, Palaces, Temples and Tombs.—**TIENTSIN.**—The Great Trade Centre of North China.—**TONGSHAN.**—The Largest Mining and Industrial Town in the Country.—**SHANHAIKWAN.**—Where the Great Wall ends at the sea.—**NEWCHWANG.**—The Busy Commercial Port of Manchuria.—**MUKDEN.**—The Ancestral home of the Manchu Dynasty. A Miniature Peking, with its Walls, Imperial Palaces, Temples and Tombs.



DINING CAR ON TRAIN DE LUXE

The through trains are equipped with Buffet and Dining Car Service. A Comfortable, Modern Train De Luxe of Compartment Sleeping Coaches is operated in connection with the through service of the Trans-Siberian and South Manchurian Railways.



FIRST CLASS SLEEPING BERTH, TRAIN DE LUXE

Through tickets to London and other places in Europe can be obtained at Peking and Tientsin from which stations passengers' luggage can be registered through to destination. Through tickets are issued and passengers' baggage registered through between the important Stations on the Peking-Mukden Railway and the South Manchuria Railway, Chosen (Korean) Railway and Imperial Government Railways of Japan.

For information regarding the many places of interest in China, Tourists will find "The Travellers' Handbook for China" with maps most useful. It is obtainable at any of the offices of Thos. Cook & Sons. The Chinese Government Railways Time Table book with Railway map can be had at any of the offices of Thos. Cook & Sons, and the International Sleeping Car Co., Hotels, Clubs and at all important Stations. Full particulars on application to any of the Stations or to the Traffic Manager of any of the Railways mentioned and on application to any office in America, Europe or the Far East of The Cie. International des Wagons-Lits, Thos. Cook & Sons, or

TRAFFIC MANAGER, CHINESE GOVERNMENT RAILWAYS (PEKING-MUKDEN), TIENTSIN.

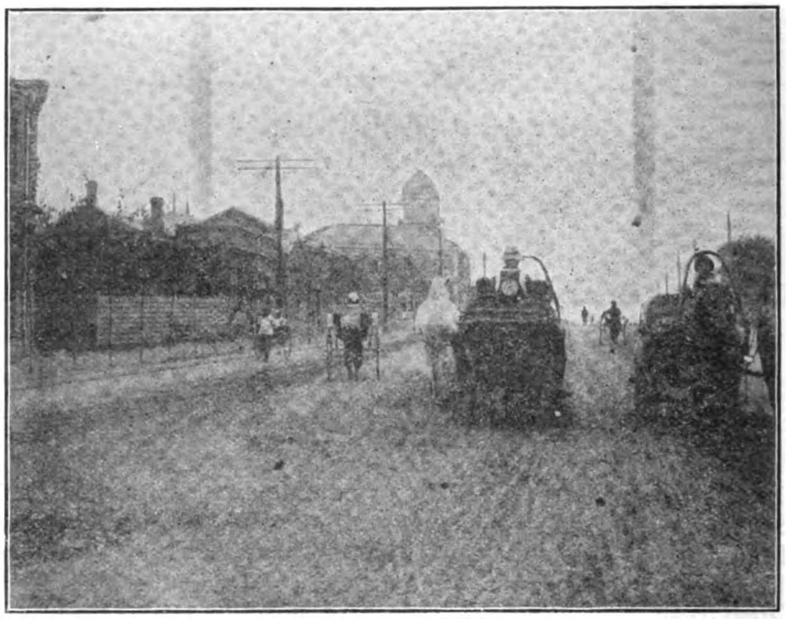
中華民國政府吉長鐵路行車時刻表

CHINESE GOVERNMENT RAILWAYS—KIRIN-CHANGCHUN LINE

TIME TABLE

DOWN TRAINS		STATIONS	UP TRAINS	
Daily			Daily	
Mixed	Mail		Mail	Mixed
P.M. 1.20	A.M. 8.30 d.	TOUTAOKOU	P.M. a. 6.00	A.M. 11.10
1.30 1.39	8.40 a. 8.42 d.	2.79 CHANGCHUN	d. 5.50 a. 5.45	11.00 10.56
2.14 2.19	9.12 a. 9.14 d.	12.69 KALUN	d. 5.15 a. 5.13	10.22 10.19
2.49 2.51	9.44 a. 9.45 d.	11.13 YINMAHO	d. 4.43 a. 4.42	9.46 9.40
3.07 3.09	9.58 a. 10.00 d.	5.38 HSIACHIUTAI	d. 4.29 a. 4.27	9.25 9.20
3.22 3.24	10.12 a. 10.13 d.	4.58 YINGCHENGTZE	d. 4.14 a. 4.13	9.07 9.05
3.51 3.55	10.35 a. 10.43 d.	9.14 TUMENLING	d. 3.53 a. 3.48	8.42 8.37
4.42 4.46	11.22 a. 11.24 d.	9.26 HUAPICHANG	d. 3.08 a. 3.06	7.51 7.47
5.07 5.08	11.37 a. 11.38 d.	6.46 KUTIENTZE	d. 2.52 a. 2.51	7.30 7.28
5.27 5.32	11.53 a. 11.55 d.	6.83 KIUCHAN	d. 2.37 a. 2.35	7.11 7.07
5.58	12.15 a.	8.30 KIRIN	d. 2.15	6.45

NOTICE:—"d" = Departure. "a" = Arrival. 25th November, 1917

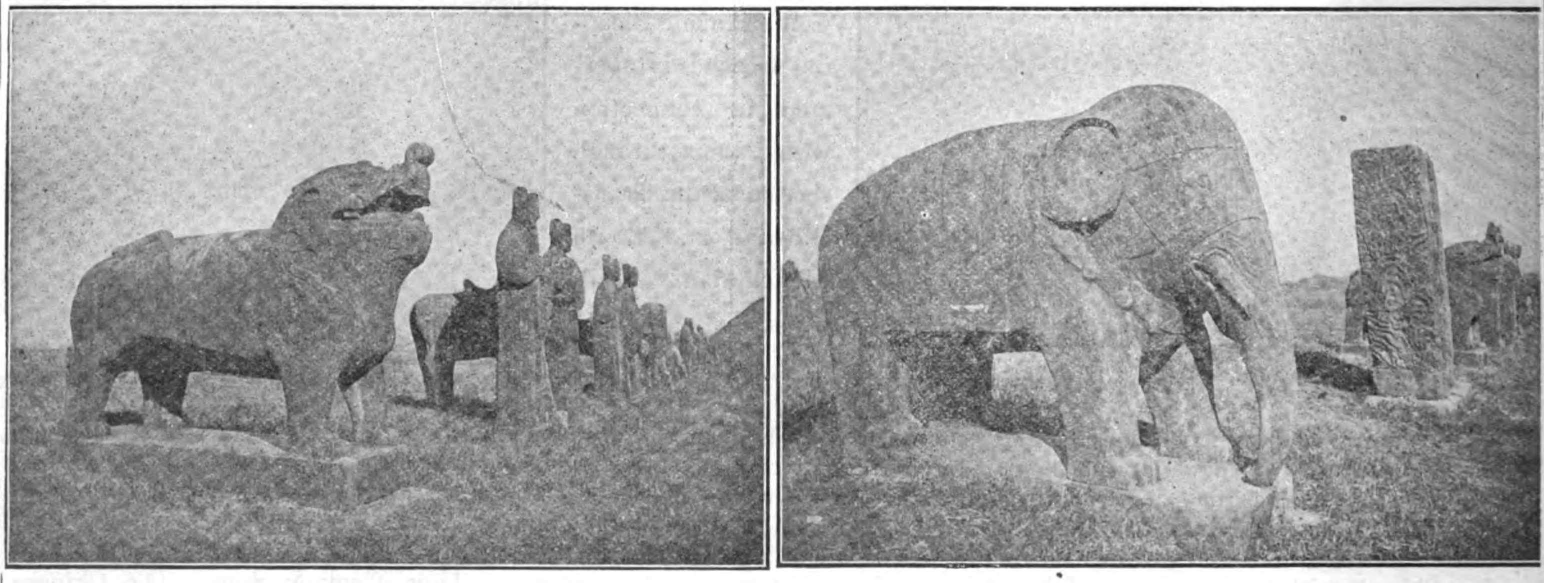


STREET SCENE, CHANGCHUN.

THE PIENLO RAILWAY

(Kaifeng-fu to Honanfu)

"THE FIRST SECTION OF THE PROJECTED CENTRAL TRUNKLINE"

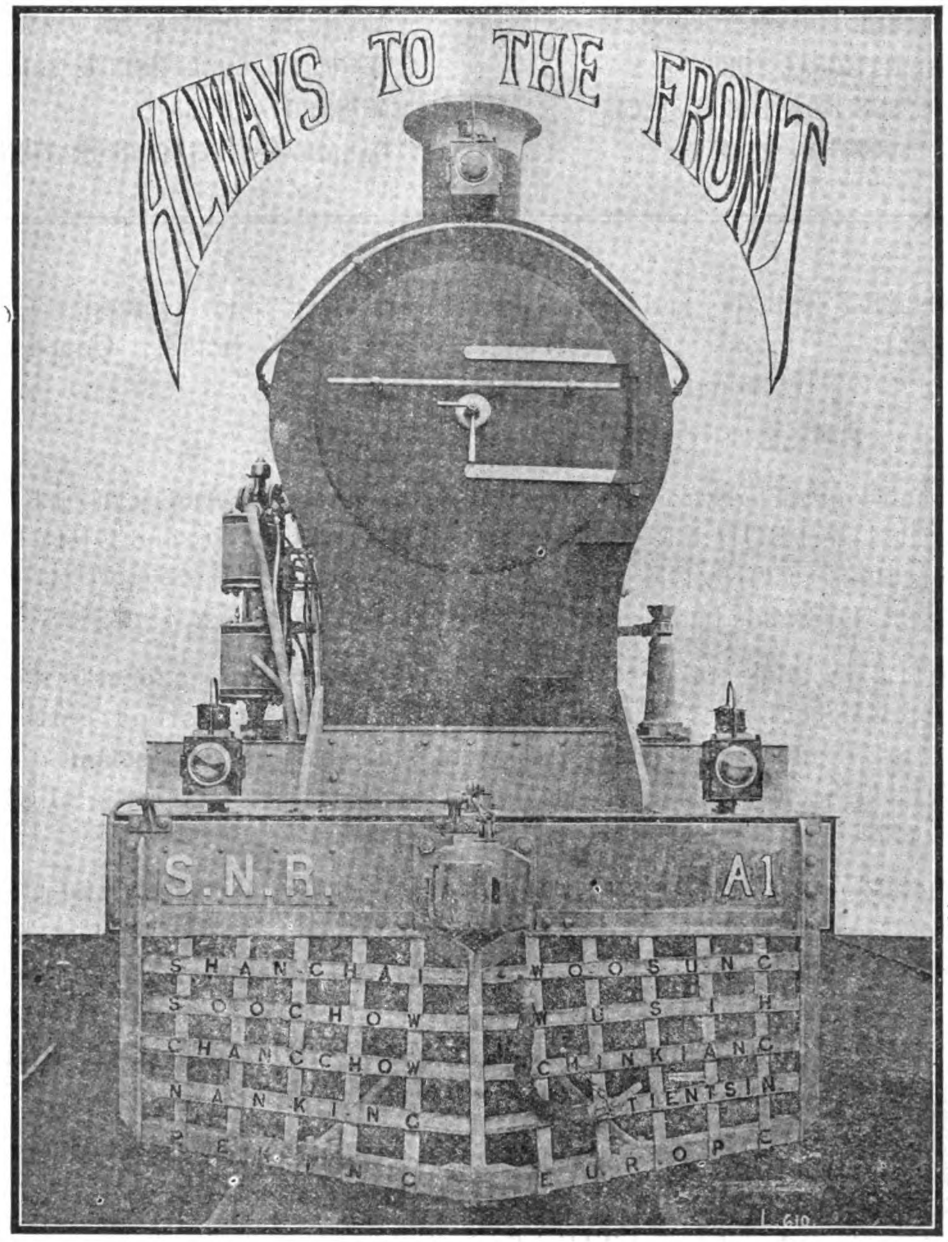


THE SUNG TOMBS NEAR KAIFENG-FU ON THE PIENLO RAILWAY.

The line connects with the through service of the Peking-Hankow Railway at Tcheng Tchéou, enabling the traveller to visit Kaifengfu, the provincial capital of Honan, and the old capital of the Empire at Honanfu.

CHINESE GOVERNMENT RAILWAYS

SHANGHAI-NANKING RAILWAY



ACCELERATED SERVICE BETWEEN SHANGHAI AND PEKING

Express and Fast Trains run daily between Shanghai North, Soochow, Wusih, Changchow, Tanyang, Chinkiang and Nanking, to which places weekend tickets, at reduced rates, are issued.

Through Bookings to Chinese Government and Japanese Lines
Reduced Rates for Picnic and other Parties

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PIPE, black and galvanized wrought, for steam, gas and water; American or English Standards Lapwelded steel BOILER TUBES. CASING, TUBING and DRIVE PIPE. Oil and Gas line Pipe. CONVERSE and MATHESON lead joint pipe. TUBULAR STEEL POLES. Lapwelded and seamless CYLINDERS. SEAMLESS STEEL TUBING.

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HOOPS for barrels and casks, and TIES for baling.

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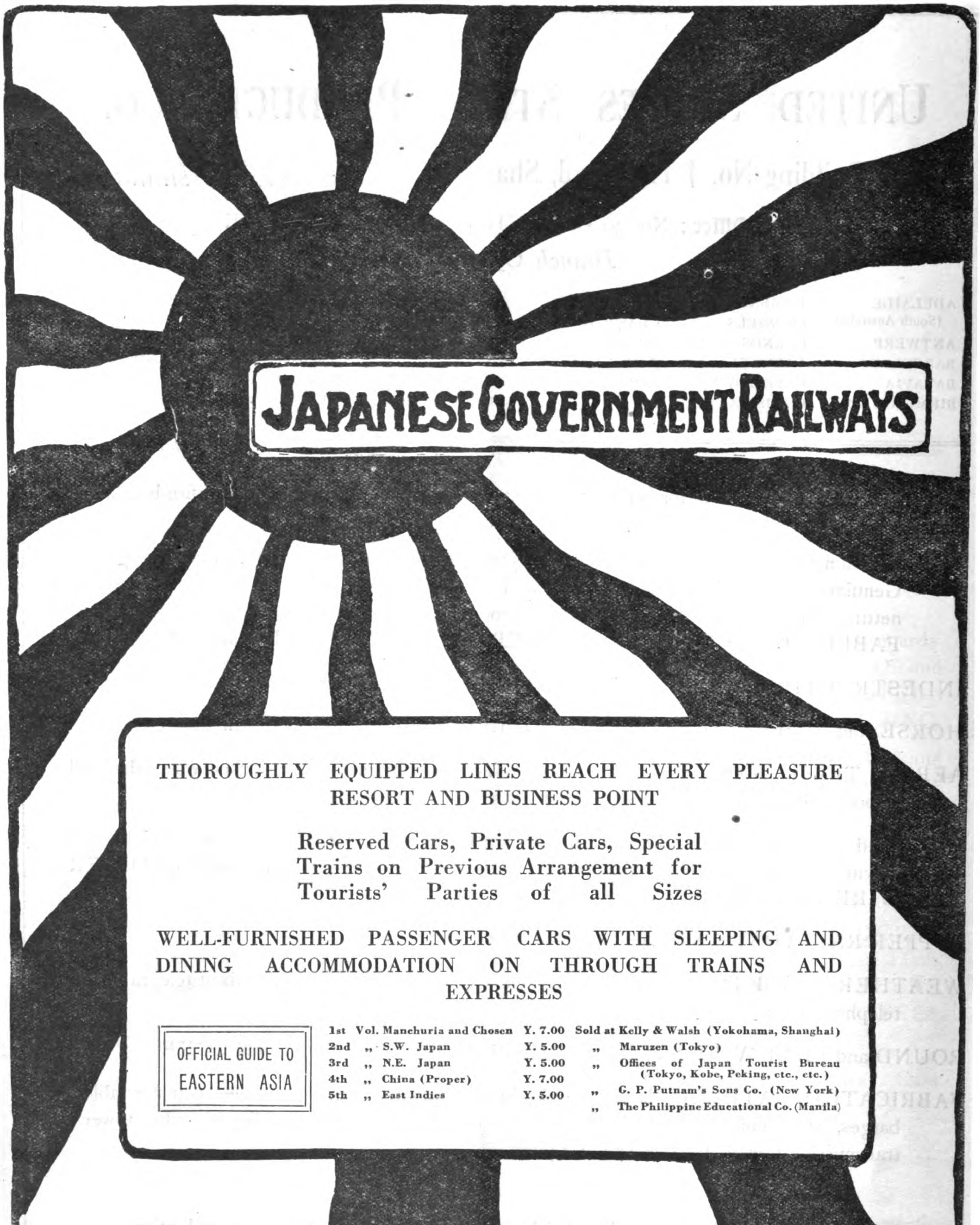
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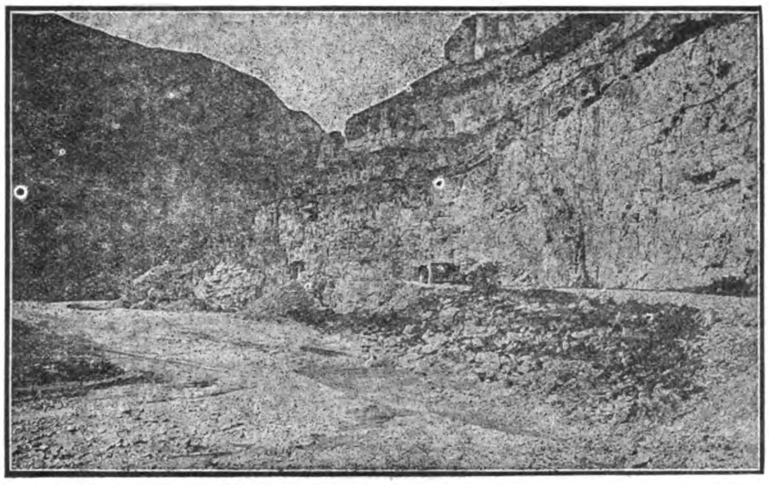
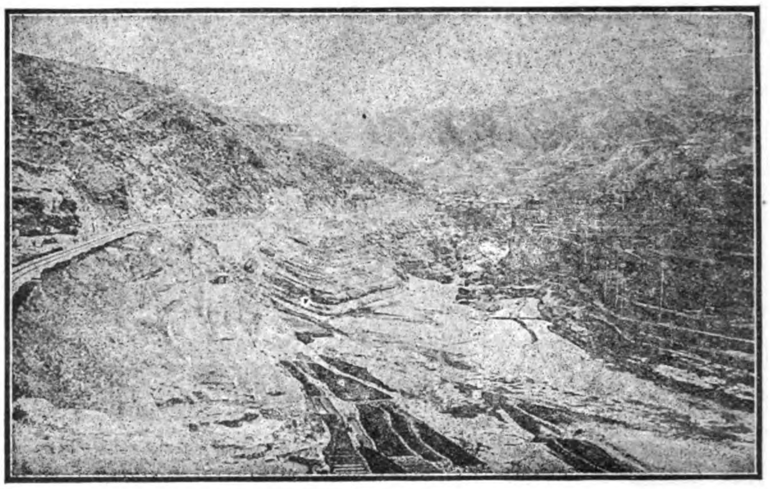
CHINESE GOVERNMENT RAILWAYS

CHENG-TAI RAILWAY

(Chinese Government Shansi Line—Chengtingfu to Taiyuanfu)



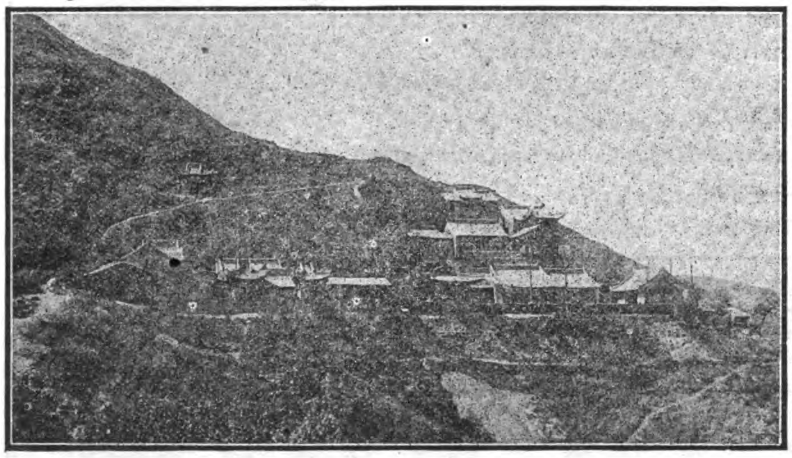


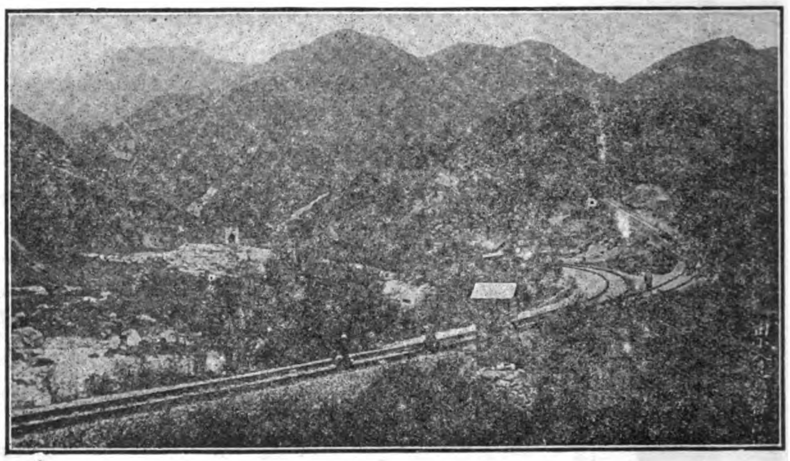
VIEWS ALONG ROUTE OF CHENG-TAI RAILWAY

The trains of this line connect with the through service of the Peking-Hankow Railway, affording Travellers the opportunity of seeing the most picturesque part of China. The line passes through a mountainous section of country, rich in Mineral Resources to the Provincial Capital of Shansi at Taiyuanfu. This interesting city is a great educational centre, and famous for the fine quality of its artistic embroideries.

PEKING-SUIYUAN LINE

"The Road to the Great Wall"

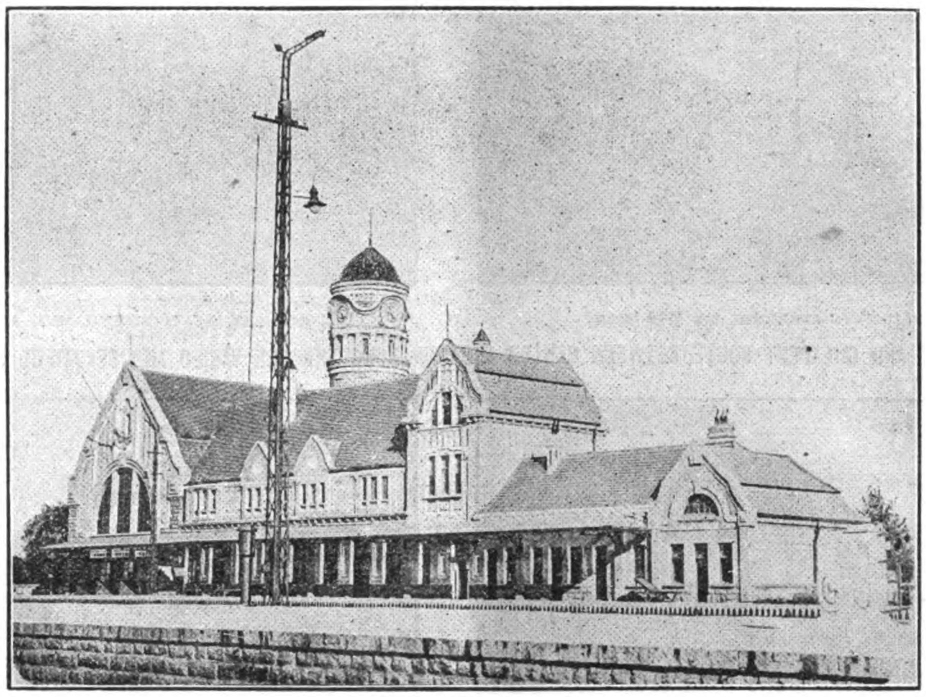




This line follows the ancient caravan route and military highway from Mongolia into China by the way of the historic Nankow Pass. This pass is the Key to Peking, and Kalgan is the gate of the Country. From here the great camel caravans set out on their long journeys across Mongolia to Siberia and Central Asia. This old frontier mart, retaining its time-honored characteristics, one of the most interesting sights of the Old World, is made accessible by the new railway. The line also carries the passenger in two hours from Peking to Nankow, when the Great Wall of China and the Ming Tombs may be seen. A foreign hotel is operated by the railway authorities at Nankow, where chairs and guides may be secured for the Tombs.

CHINESE GOVERNMENT RAILWAYS.

TIENTSIN-PUKOW LINE.



TSINANFU STATION.

THE above-named line, with its SOUTHERN end at PUKOW and NORTHERN end at TIENTSIN is having its through mail trains equipped with SLEEPING and BUFFET CARS running both ways every day. Comfortable seats and best meals are supplied on the trains. SANITARY ARRANGEMENTS are kept in perfect order and condition. A ferry steamer of modern type is provided for the conveyance of passengers across the river BETWEEN NANKING and PUKOW. Along this line travellers are afforded the opportunity of seeing the views of the country and many places of historic antiquities that will serve interest to the travelling observers. The time for the running of the trains are so scheduled as to make them CONNECT WITH the trains of the SHANGHAI-NANKING LINE on the southern terminus and those of the PEKING-MUKDEN LINE at the northern end. Travellers who intend to go to PEKING, KALGAN, TATUNG, MUKDEN, SOUTH MANCHURIA and SIBERIA or VICE VERSA are enabled to effect their journeys of a great distance at a very short space of time, it being considered the SAFEST and QUICKEST route for the travelling public.

For further particulars, please apply to:

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Telegraphic Address: "TSINPURY" TIENTSIN. **Codes: A.B.C. 5th Edition.**

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北至天津每日均有
快車往來並附掛臥
車餐車食品精潔座
次安舒關於衛生各
事皆極講求南京浦
口間近添設新式渡
輪迎送旅客尤稱便
利沿途風景名勝之
區古蹟極多足饜游
觀者之心目且行車
時刻南與滬甯北與
京奉均相聯接凡欲
至北京張家口大同
及奉天南滿西伯利
亞等處往來均可尅
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志游歷者所樂於取
道也如有詢問事項
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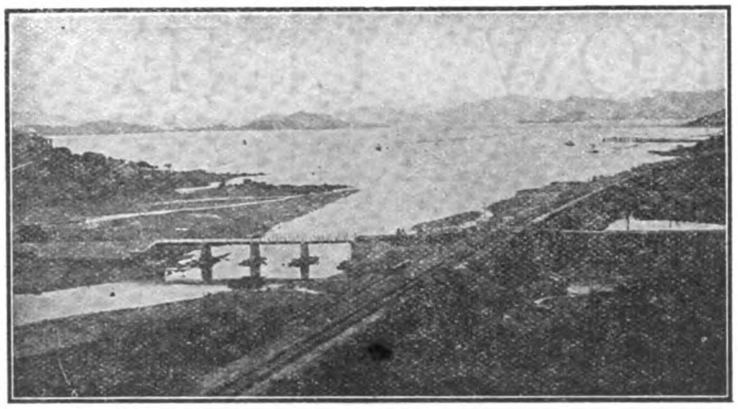
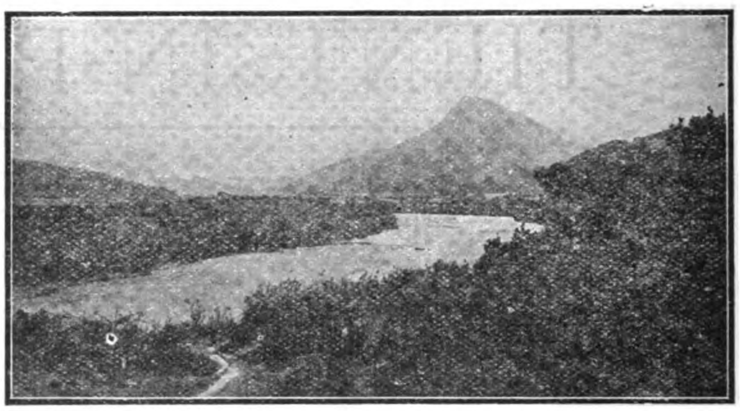
VIEWS ON THE BRITISH SECTION (22 MILES) VIEWS ON THE CHINESE SECTION, 89 MILES (Chinese Government Railways)



CANTON-KOWLOON RAILWAY—APPROACH TO KOWLOON



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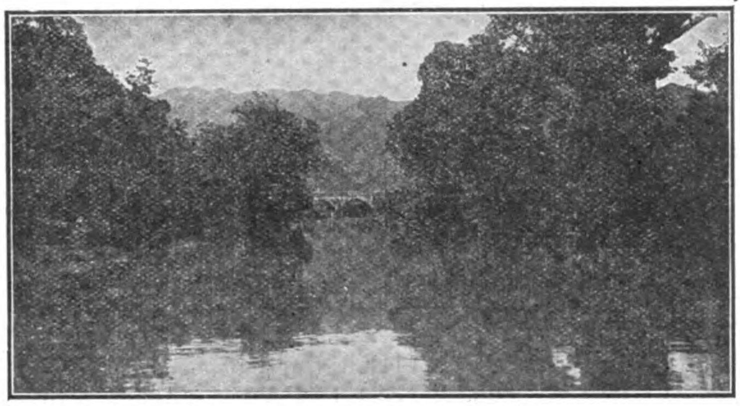
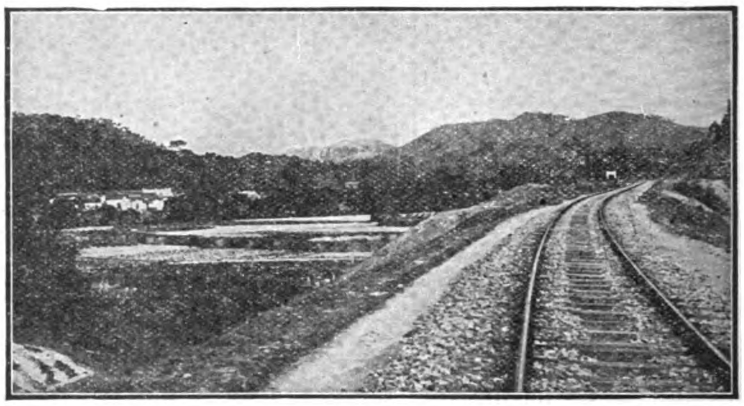


CANTON-KOWLOON RAILWAY—SCENE ALONG ROUTE



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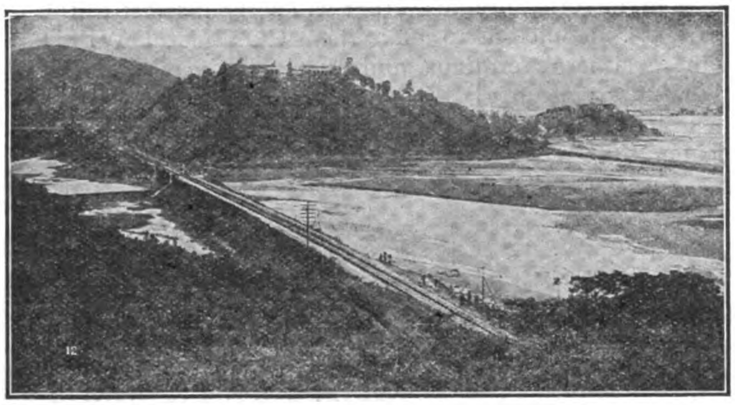
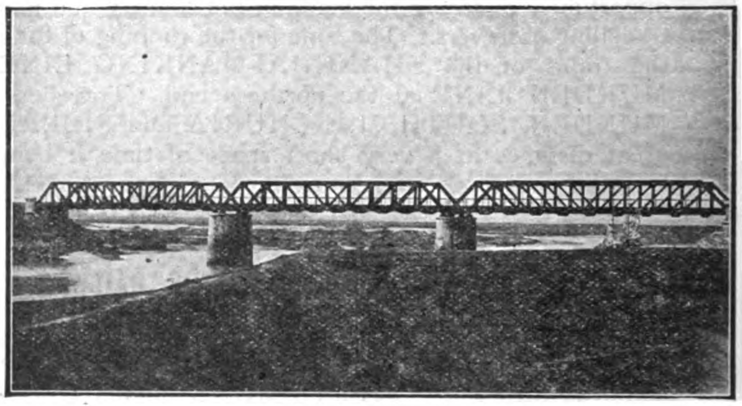


CANTON-KOWLOON RAILWAY—CROSSING TIDE FLATS



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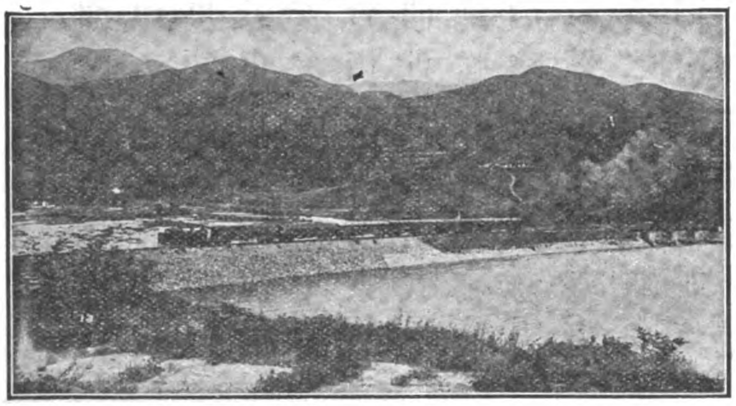
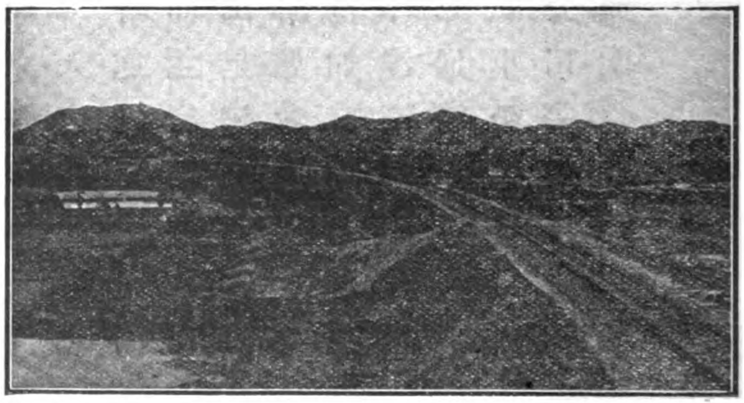


CANTON-KOWLOON RAILWAY—EMBANKMENT APPROACH TO BRIDGE



GRAND CURVE NEAR SHEUNG PING

TIME TABLE from November 7th, 1918

Leave Hongkong (Kowloon) *8.05, 9.20 a.m., *3.00 p.m.
Arrive Canton (Tai Sha Tou) 11.50 a.m., 5.10, 6.40 p.m.

Leave Canton (Tai Sha Tou) *7.30, 8.35 a.m., *3.30 p.m.
Arrive Hongkong (Kowloon) 11.10 a.m., 5.38, 7.25 p.m.

Special terms and special trains for large tourist parties. For further particulars see advertisements or apply to

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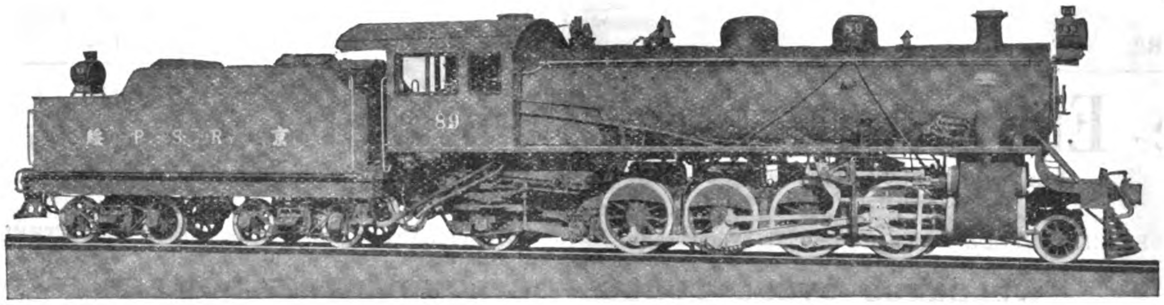
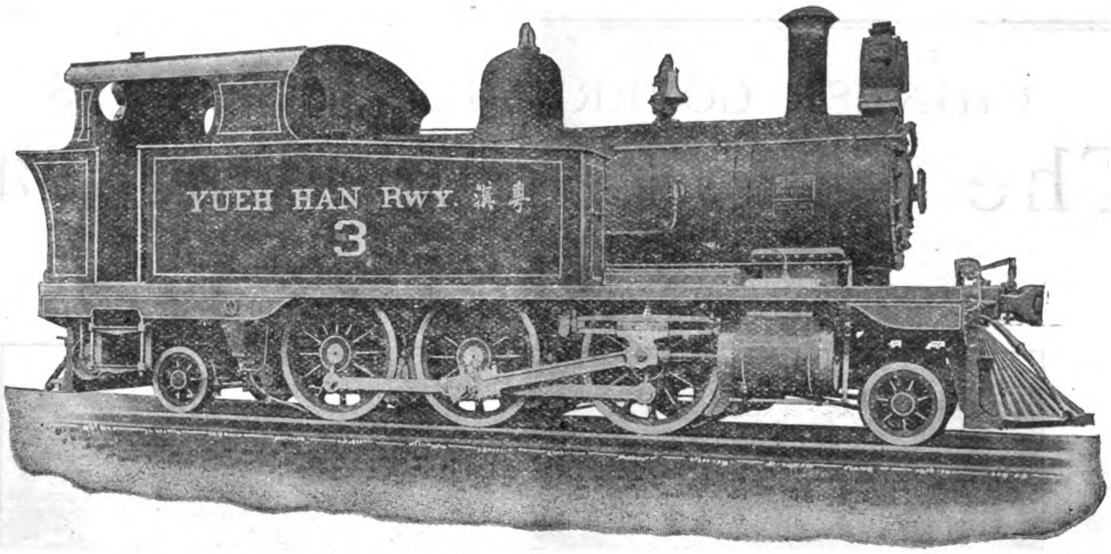


Total Weight of Engine, 187,500 pounds; Weight on Drivers, 139,000 pounds; Diameter of Drivers, 50 inches; Boiler Pressure, 180 pounds; Cylinders, 20 × 28 inches; Maximum Tractive Power, 34,300 pounds.

18 of these engines were delivered by this company to the Pekin-Kalgan Railways

The American Locomotive Sales Corporation, through its technical staff in China, or by writing to the head office, will be glad to co-operate to the fullest extent with the mechanical officials of the railways in the preparation of designs of locomotives to meet the present as well as the prospective requirements of the railways in China.



Total Weight of Engine, 98,800 pounds; Weight on Drivers, 72,700 pounds; Diameter of Drivers, 48 inches; Boiler Pressure, 180 pounds; Cylinders, 15 × 20 inches; Maximum Tractive Power, 14,340 pounds.

6 of these engines were delivered by this company to the Canton-Hankow Railway

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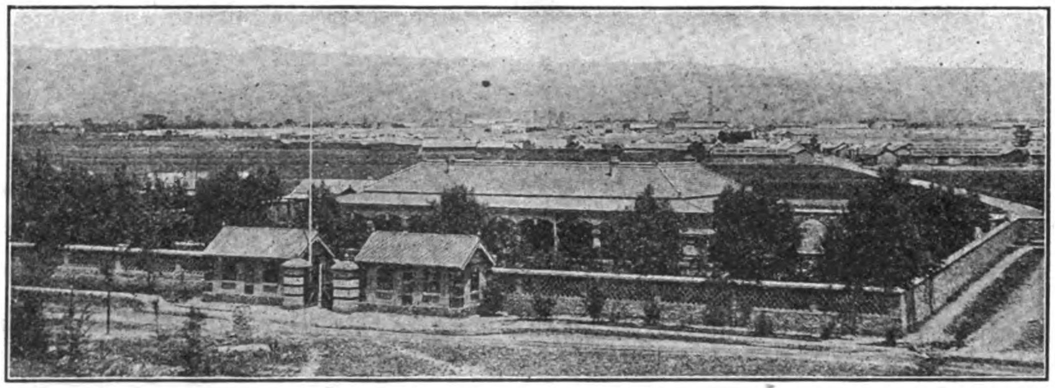
TAOKOU TO CHINGHUA

(CHINESE GOVERNMENT HONAN LINE)



A VIEW ON THE TAO-CHING RAILWAY, WITH MINE IN DISTANCE.

"CHINA'S ROAD OF ANTHRACITE"

The trains of this line connect at Sin-Siang-Sien with the through service of the Peking-Hankow Railway. It taps the great Anthracite Coal Deposits of Shansi, and conveys the products of the Mines to the nearest navigable river.

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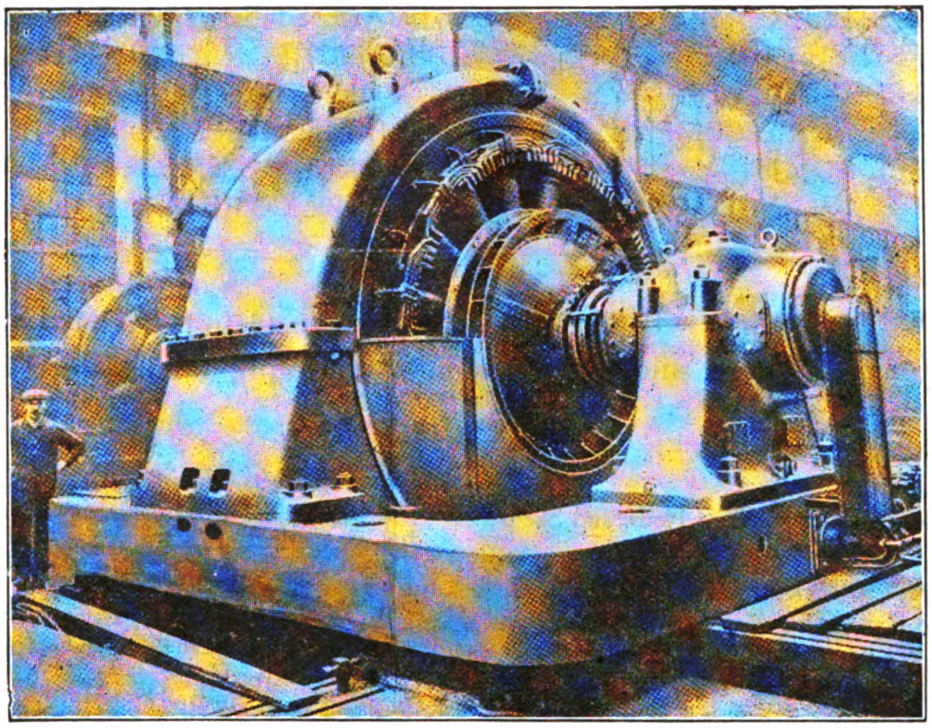

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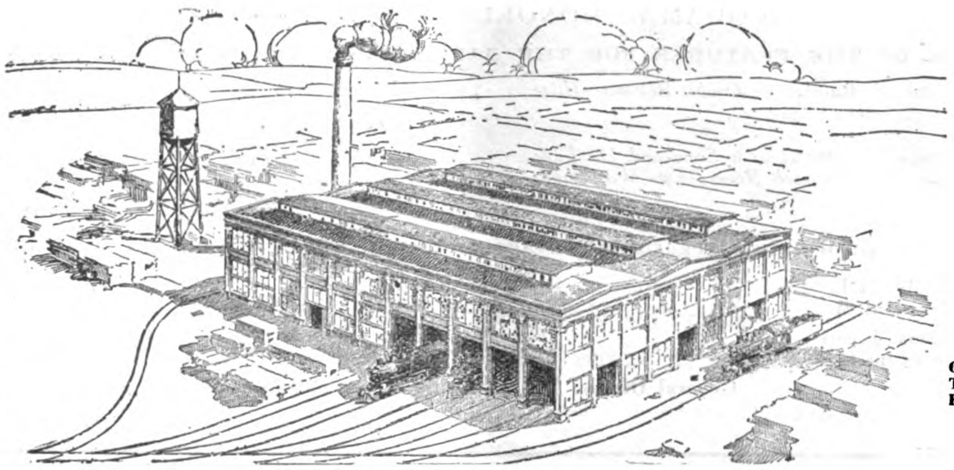

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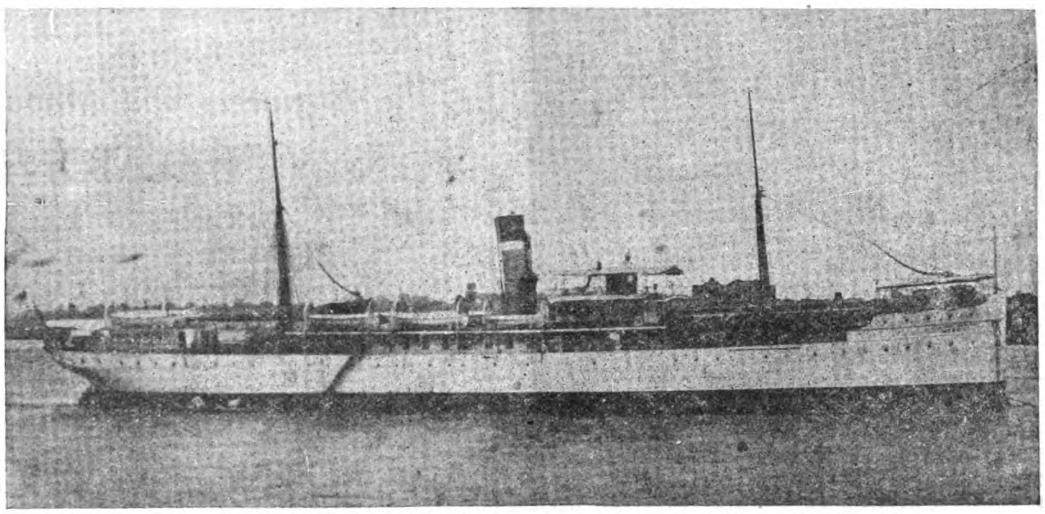

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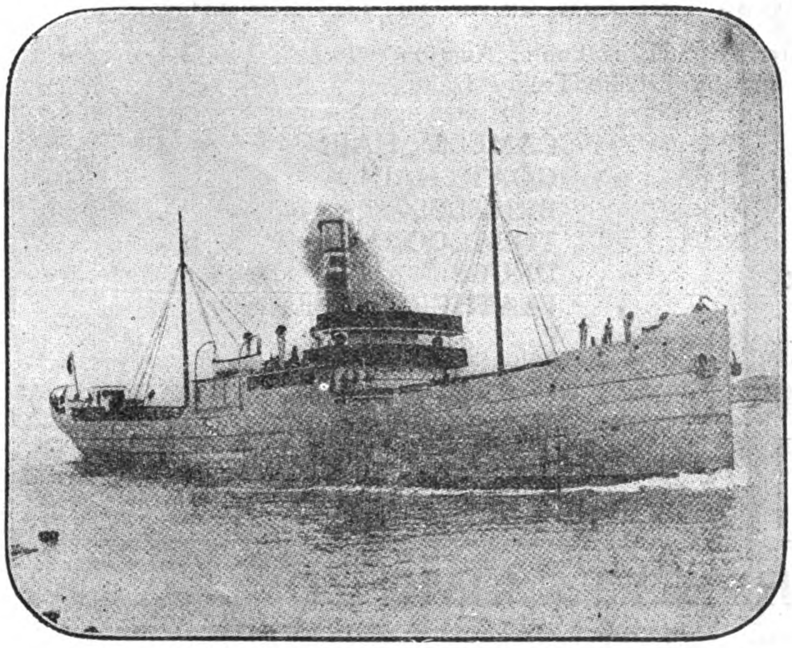

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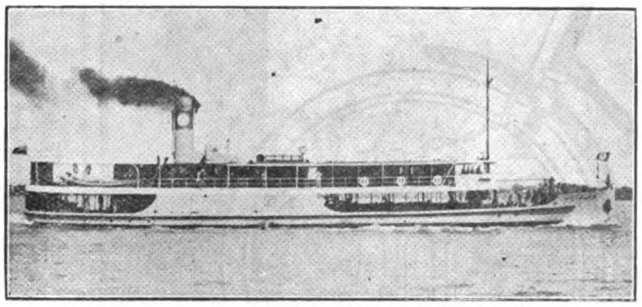

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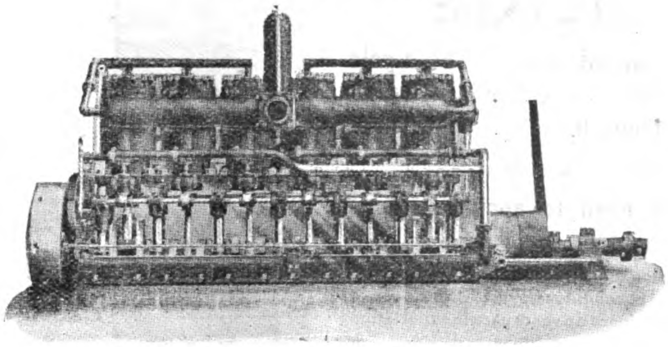

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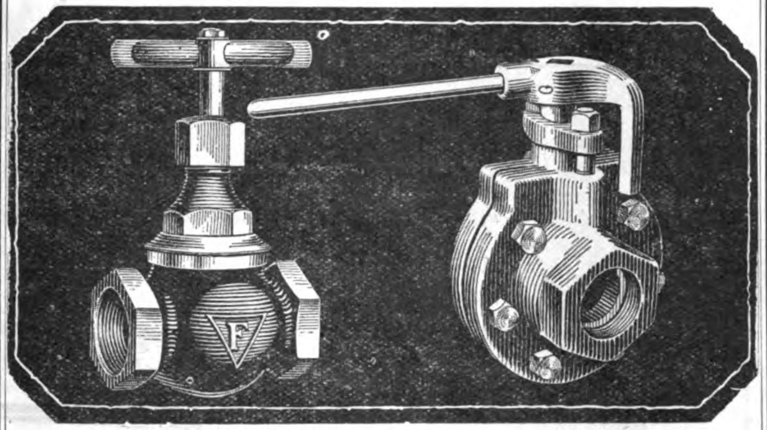

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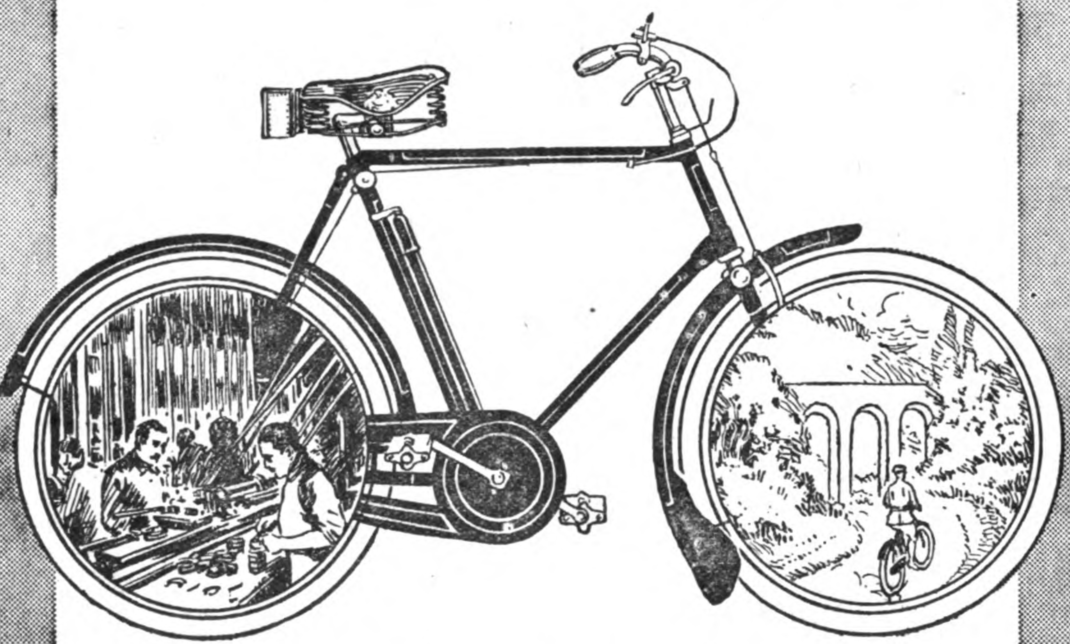

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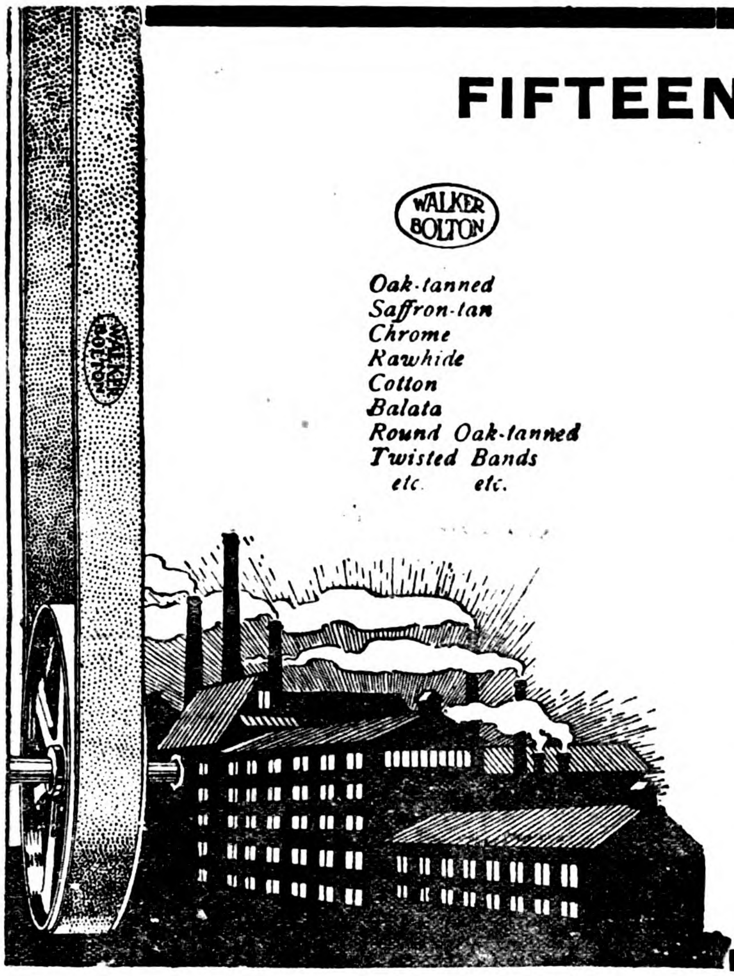

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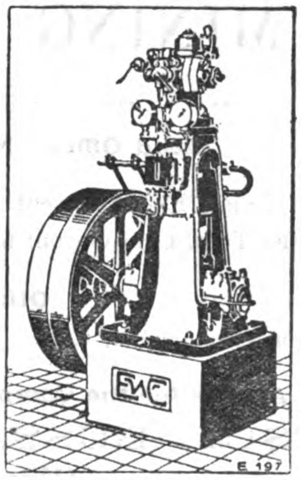

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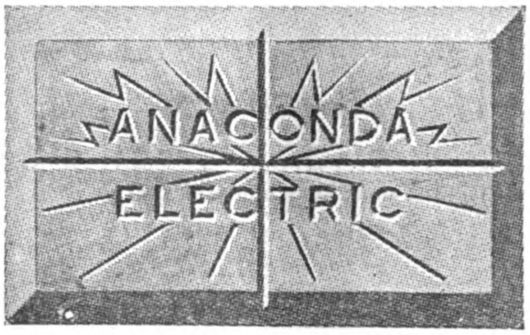

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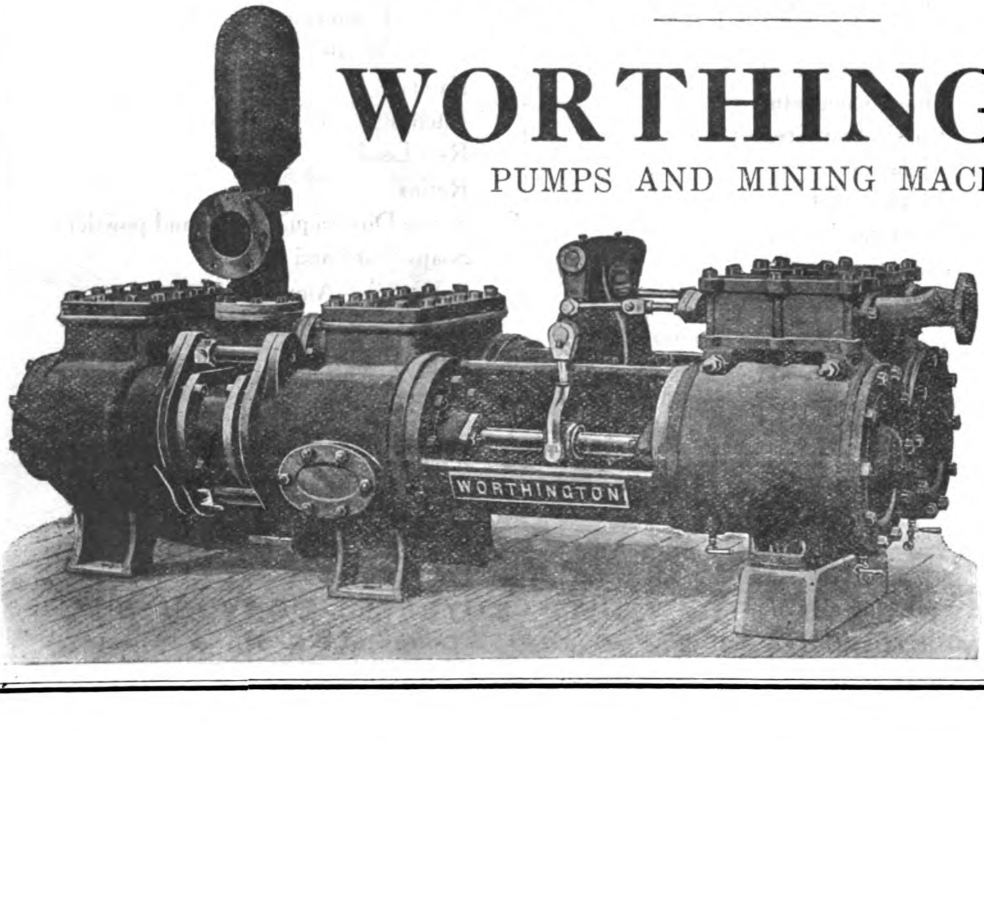

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The Far Eastern Review

ENGINEERING FINANCE COMMERCE

VOL. XVI SHANGHAI, APRIL, 1920 No. 4

Port and Railway Schemes for South China

Dr. Sun Yat Sen's Third Program for the International Development of China

The First Program for the International Development of China as devised by Dr. Sun Yat-sen was published in the FAR EASTERN REVIEW of June, 1919, and embraced: (1) the construction of a great Northern port on the Gulf of Pechihli; (2) the building of a system of railways from the great Northern port to the North-Western extremity of China; (3) the colonization of Mongolia and Turkestan; (4) the construction of canals to connect the inland waterway systems of North and Central China with the great Northern port; and (5) the development of the iron and coal fields in Shansi and the construction of an iron and steel works. In the FAR EASTERN REVIEW of August, 1919, the Second Program was published and comprised (1) a great Eastern port; (2) the regulation of the Yangtze channels and embankments; (3) the construction of river ports; (4) the improvement of existing canals and waterways in connection with the Yangtze, and (5) the establishment of large cement works.

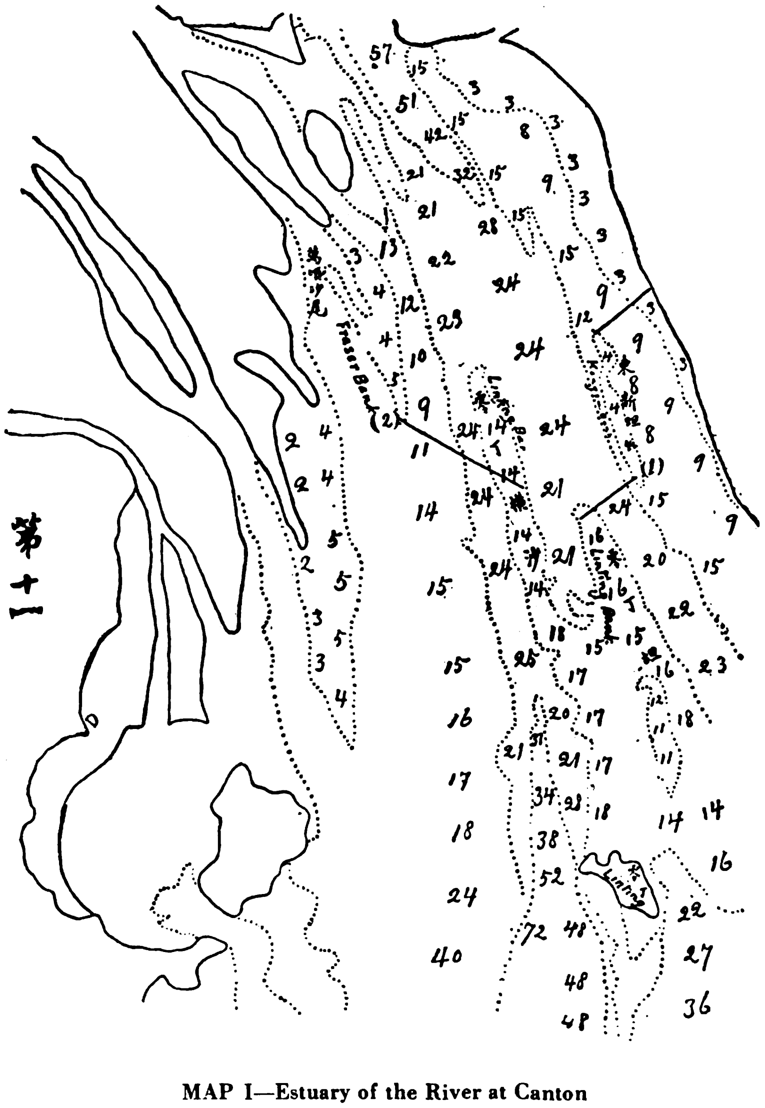
By Dr. Sun Yat-sen, ex-President of China.

THE main feature of the third program will be the construction of a great southern port which will complete the plan for three first-class seaports in China as proposed in the preliminary part of this International Development Scheme. Our Great Southern Port will naturally be Canton, which is not only the centre of commerce in South China but also the largest city in all China. Until recent times it was the largest city on the Coasts of the Pacific, and the centre of commerce of Asia. With the development of China, Canton will surely resume its former importance. Around this southern metropolis I formulate the third program as follows:—

I. The Improvement of Canton as a World Port.
II. The Improvement of the Waterway System of Canton.
III. The Construction of the Southwestern Railway System of China.
IV. The Construction of Coast Ports and Fishing Harbors.
V. The Establishment of Shipbuilding Yards.

Part I.—The Improvement of Canton as a World Port

Canton's position as a seaport has been taken away by Hongkong since its session to England after the Opium War. But as a commercial centre of South China, Canton still holds its own, despite the advantages of deep-water harbor, the artificial improvements of Hongkong, and the political dominance of England. The loss of its position as a seaport is entirely due to the ignorance of the Chinese people who never made any combined effort to improve the welfare of the country, and also to the corrupt government and officials of the Manchu dynasty. Since the establishment of the Republic, the people have begun to awake very rapidly and many schemes have been suggested to make Canton a seaport. This awakening of the millions of Chinese has caused much apprehension to the Hongkong Government. The authorities of that colony have been doing their utmost to hinder every move to restore Canton as a seaport and try to nip every scheme in the bud. Of course, if Canton is improved and made into a world port, then all the services that Hongkong performs for her as a shipping stage would be dipensed with altogether. But a developed Canton and a prosperous China will recompense Hongkong in various ways a hundred times more than its present position as the monopolized ocean port of a backward and poor China. Just look at the port of Victoria in British Columbia, which was once the only seaport of West Canada as well as the Northwestern region of the United States, but it prospered very little then with an undeveloped hinterland despite its monopolistic character. Whereas as soon as the rival ports arose Vancouver on its own side, and Seattle and Tacoma on the American side, all within



MAP I—Estuary of the River at Canton

the same distance as Hongkong is to Canton, all of them because of a developed hinterland prospered wonderfully, despite the keen competition between them as seaports. Thus, we see that competitive seaports like Vancouver, Seattle, and Tacoma instead of killing Victoria, as was once supposed by shortsighted people, have made it more prosperous than ever. Then, why doubt that a prosperous Canton and a developed China would not give the same result to Hongkong? This is but a natural outcome. Therefore, there should be no fear that a prosperous Canton and a developed China would be harmful to Hongkong as a free port. So, instead of doing the utmost as hitherto to hinder the development of Canton as a seaport, the Hongkong authorities should do their utmost to encourage such a project. Besides, the development of Canton and South China will benefit the English as a whole commercially a hundred times more than Hongkong can do at present. Although the local authorities of that crown colony do not see far enough to realize it, however, I believe that the great statesmen and captains of industries in the now mightiest empire of the world would surely see it. With this belief in my mind I feel quite safe in giving publicity to the scheme of my international development of Canton as a world port in South China.

Canton is situated at the head of the Canton Delta, which is formed by the junction of three rivers—the Sikiang or West River, the Peikiang or North River, and the Tungkiang or East River. The area of this delta is about 3,000 square miles and has the most fertile alluvial soil known in China. The land yields three crops a year—two crops of rice and one crop of other products such as potatoes or beets. In silk culture, it gives eight crops every year. The most delicious fruits of many varieties are produced in this delta. This is the most thickly populated district of all China. Within this delta and its immediate neighborhood, more than half of the population of Kwangtung province is found. This is the reason why, despite the great productivity of this fertile delta, large quantities of foods have to be supplied by the surrounding country as well as by foreign imports. Before the age of machinery Canton for centuries was well known as an industrial centre of Eastern Asia. The workmanship and handicraft of its people are still unequaled in many parts of the world. If machinery will be introduced in its industries under our international development scheme, Canton will soon recover its former grandeur as a great manufacturing centre.

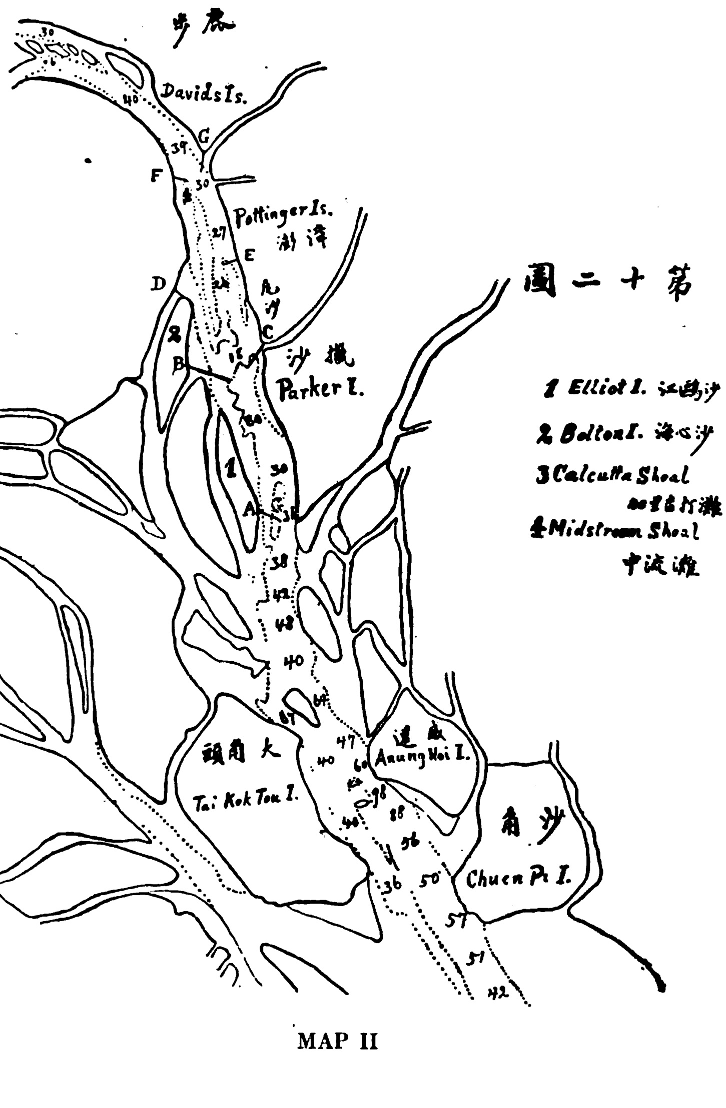
As a world port, Canton is in a most advantageous position. Being situated at the junction of three navigable rivers and at the head of the ocean navigation is a pivot of inland water as well as ocean communication in South China. If the Southwestern railway system is completed, then Canton will be equal in importance to the two great ports in North and East China, in regard to transportation facilities. The ocean approach of Canton is generally deep excepting at two points which can be easily trained and dredged to enable modern liners to pass in and out at any hour. The deep water line of the ocean reaches up to Lingting Island, where the depth is from 8 to 10 fathoms. Above Lingting, the channel gets shallower (about 3 or 4 fathoms) and runs about 15 miles up to the Fumen Entrance. From this point the water becomes deep again (between 6 and 10 fathoms) right up to the Second Bar—a distance of 20 miles. At the Second Bar, the water is about 18 to 20-ft. deep for only a few hundred yards. After crossing the Second Bar, the water becomes deep again for a distance of 10 miles averaging about 30-ft. deep up to the First Bar which will be the city limit of our future Canton.

To improve the Approach to Canton, I suggest that two submerged training walls be built at the left side of the Canton Estuary above Lingting Island—one from the shore to the head of the Kongsu Bank, and another from the end of the same bank to the head of the Lingting Bank. The first training wall will be 3 to 4-ft. under water just at the same level of the bank. The second wall will be from 4-ft. at one end to 16-ft. at the other, which are the levels of the respective banks which it connects. (See (1) (3) Map I). It will cross a channel of 24-ft. deep between them. These two walls together with the four-foot Kongsu Bank will act as one continuous wall and will direct the undercurrent which now runs between the left shore and Lingting Bank, into the middle part of the estuary, thus cutting a channel between the bar and the bank of the same name to meet the deep water on the west side of Lingting Island. On the right side of the Canton Estuary, a training wall should be built from the lower part of Fraser Bank in a southeasterly direction across the 24-foot channel into the Lingting Bar ending at the east edge of that bar. (See (2) Map I). Thus, with these submerged walls on both sides of the estuary to confine the undercurrent in the middle, a very deep channel can be formed to connect with the Fumen Entrance at one end and the Lingting trough at the other both of which are about 50-ft. deep so that a thoroughfare from deep sea right up to the Second Bar of the Pearl River will be created.

These submerged sea walls taken together are about 8 miles in length and will be built only 6 to 12-ft. from the bottom of the sea. The expenses will not be much while the acceleration of the natural reclamation process will be very great. Thus, the lands that will be formed on both sides by these walls will far more than repay the expenses of the work of building these walls.

To regulate the Approach of Canton, in that part of the Pearl River from the Fumen Entrance to Whampoa, I suggest that the East River Estuaries be concentrated in a single outlet by using the uppermost channel which joins the Pearl River at the lower point of Davids Island. The other outlets of the East River, which joins the Pearl River below the Second Bar, should be closed up by dams built to the height of the normal water level so as to permit them to serve as flood channels in the rainy season. By concentrating the whole volume of water of the East River above the Second Bar, a stronger current could be obtained to flush the upper part of this section of the river.

In the training works of this section, I propose that several jetties should be built as follows: First, a jetty from Elliot Island at point (a) to the farther side of Calcutta Shoal opposite the lower point of Parker Island. This will block the current



MAP II

between Elliot Island and Calcutta Shoal and divert it into the present 36-ft. channel thus making it deeper by its natural force. Second, another jetty from Bolton Island, at point (b) to midstream terminating at the lower side of the Second Bar, on the right side of the river. Third, a jetty from the lower point of Pottinger Island at (c) to midstream terminating at the lower side of the same bar on the left side of the river. Thus the Second Bar would be flushed by the concentrated current created by these two jetties. The shallow bottom above these jetties should be dredged to the required depth. If a rocky bottom is found at this bar it should be blasted and removed, so as to give a uniform depth to the whole approach. Fourth, the channel between the right bank of the river and Bolton Island should be blocked up at (d). Fifth, a jetty from Pottinger Island at (e) to the head of the Second Bar Bank in midstream so as to cut off the current at the left side of the river and to increase the velocity in the middle channel. Sixth, a jetty from the right shore at (f) about midway between Danes Island and the Second Bar, should be built to the head of the Midstream Shoal so as to cut off the current at the right side of the river. And seventh, another jetty from the lower point of Davids Island at (g) to midstream opposite to the end of jetty (f). Jetties (g) and (f) will concentrate the current of the upper Pearl River while at the same time Jetty (g) will also turn the East River current into the same direction as that of the Pearl River. (See Map II).

By these seven jetties, the current between Whampoa and Fumen could be controlled and the bottom of the river flushed to a depth of 40-ft. or more, thus creating a thoroughfare for ocean-going steamers from the open sea right up to the city of Canton. These jetties taken together will be not more than 5 miles in length and mostly in very shallow water. After the building of these jetties, land will be rapidly formed between jetties along both sides of the channel by natural process. The reclaimed land alone will be quite enough to pay the expenses of constructing these jetties, aside from the fact that the main object of regulating the river and opening up a deep channel for ocean transportation will have been realized.

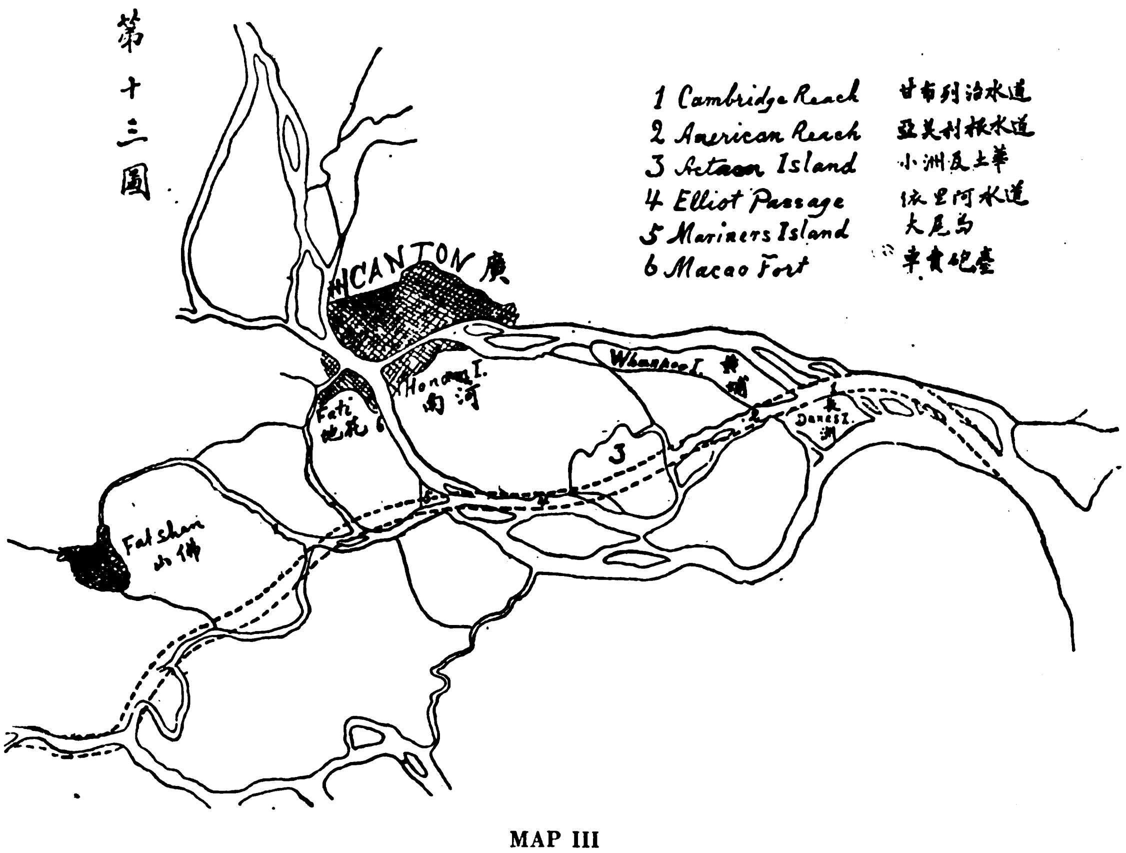
Making a World Port of Canton City

Having dealt with the approach to Canton, we may now take up the improvement of Canton City itself as a world port. The harbor limit of Canton will be at the First Bar. From there, the harbor will follow the deep water of Cambridge Reach and the water between Whampoa and Danes Island into American Reach. At this point it will cut through Actaeon Island to the south of Honam Island and follow the Elliot Passage to Mariners Island. From Mariners Island following the Fatshan Creek, a straight channel should be cut in a southwesterly direction to the Tamchow Channel. Thus, a new waterway will be made from the First Bar to Tamchow Channel, a distance of about 25 miles. This waterway will be the main outlet of the North River as well as a thoroughfare for the West River, and will also serve as the harbor of Canton. By conveying all the water of the North River and a part of that of the West River through this waterway, the current will be strong enough to flush the harbor to a depth of 40-ft. or more. (See Map III).

The new city of Canton will be extended from Whampoa to Fatshan, separated by the Macao Fort and Shameen Reaches. The section that lies east of this water should be developed into commercial quarters and that west of it into factory quarters. The factory section should be transected by canals connecting with the Fati and Fatshan creeks so as to give cheap transportation facilities to every factory. In the commercial section, tidal wharves with modern plants and warehouses should be provided. A bund should be built from the First Bar Island along the north side of the new waterway, the west side of Honam to connect with the bund of Shameen, and the northwestern side of Canton city. Another bund should be built from above Fati along the east side of Fati Island to Mariners Island thence turning southwest along the left bank of the new waterway. The Front Reach, that is, the river between the present Canton city and Honam Island should be filled up from the upper point of Honam to Whampoa for city building.

In regard to the question of remuneration, the development of Canton as a world port will be the most profitable undertaking of the kind in the International Development Scheme. Because, besides its commanding position as a commercial metropolis and its possession of advantageous facilities as a manufacturing centre of South China, a modern residential city is in great demand in this part of the country. The well-to-do people and merchants of this rich delta as well as those retired Chinese merchants and millionaires abroad all over the world are very eager to spend their remaining days at home. But owing to the lack of modern conveniences and comforts they reluctantly remain in foreign countries. Thus to build a new city with modern equipments for residential purposes alone, in Canton, would pay splendidly. The land outside of Canton is at present about 200 dollars a *mow*. If the land marked off for the future city of Canton should be taken up by the State on the same basis as elsewhere in this International Development Scheme, immediately after the streets are laid out and improvements made, the price of land would rise from 10-50 times its original value.

The landscape of the environment of Canton is exceptionally beautiful and charming. It is an ideal place for planning a garden city with attractive parks. The location of the city of Canton resembles that of Nanking but is of greater magnitude and beauty. It possesses the three natural elements—deep water, high mountains, and vast extent of level land which furnish facilities for an industrial and commercial centre and provide as well natural scenery for the enjoyment of men. The beautiful



MAP III

valleys and hills of the northern shore of the Pearl River could be laid out for ideal winter resorts and the high mountain tops could be utilized for summer resorts.

Within the city limits at the northwest corner, a rich coal field has been found. When the coal is mined and modern plants for generating electricity and producing gas are provided, then cheap electricity and gas could be had for transportation, for manufacturing, for lighting, heating, and cooking purposes. And so the present wasteful methods of transportation, and expensive fuels for manufacturing and cooking for the populous city of Canton can be done away with entirely. Thus the great economic wonders could be wrought by such improvements. The present population of Canton is over a million and if our development plan is carried out, this city would grow in leaps and bounds within a very short time. The population will become greater than any other city and the profit of our undertaking will become correspondingly large.

Part II.—The Improvement of the Waterway System of Canton

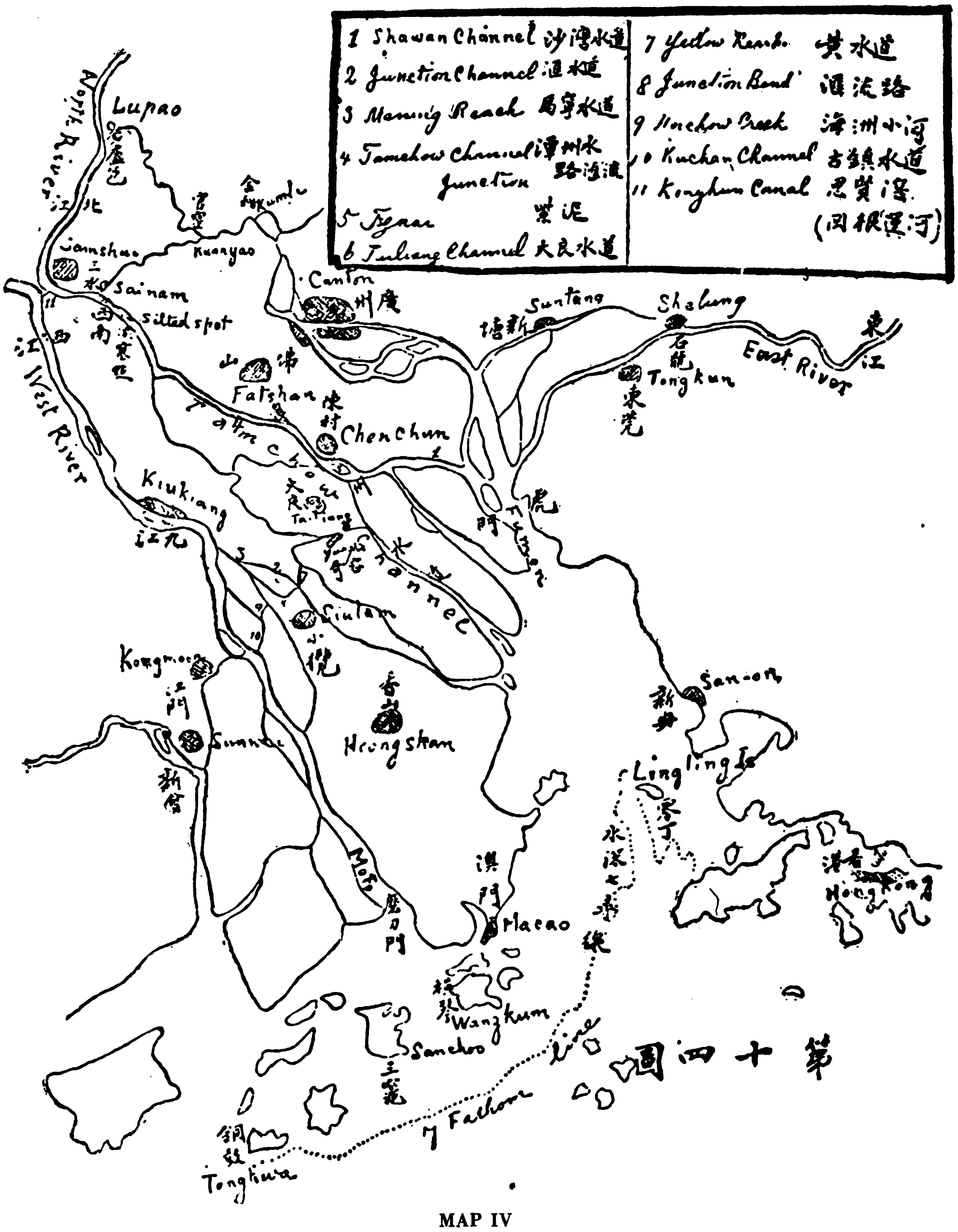
The most important waterway system in South China is the Canton system. Besides this the others are not of much importance and will be dealt with elsewhere with their ports. In dealing with the Canton system of waterways, I have to divide it as follows:—

(*a*) The Canton Delta.
(*b*) The West River.
(*c*) The North River.
(*d*) The East River.

(*a*) To improve the Canton Delta we have to consider the proposition from three points of view: First, the problem of flood prevention; second, the problem of navigation; and third, the problem of reclamation. Each of these problems affects the others so the solution of one will help that of the others.

First, the problem of flood prevention. The frequent repetition of floods in recent years has wrought great disasters to the people in the neighborhood of Canton. It has destroyed lives by the thousands and property by the millions. The part which suffers most is the country between Canton and Lupao, lying just immediately north of the Canton Delta. This fatal spot is, I think, created by the silting up of the main outlet of the North River immediately below Sainam. On account of this, the North River has to find its outlets through the West River by the short canal at Samshui and through two small streams one from Sainam, and another from Lupao. The former runs in a northeasterly direction and the latter in a southeasterly direction and they join at Kuanyao. From this point, the river takes a northeasterly course as far as Kumli, thence, turning southeast, passes the west suburb of Canton. Since the North River is silted up below Sainam, its channel above that spot is also getting shallower every year. At present the river above Samshui city is only about 4 or 5-ft. deep. When the North River rises its water generally finds its way into the West River through the Kongkun Canal. But if the West River should rise at the same time, then there would be no outlet for the North River and its water would accumulate until it overflows its dykes above and below Lupao. This would naturally cause the dykes to break at some point and allow the water to rush out and flood the whole country that is meant to be protected by these dykes. The remedy for the North River is to reopen the main outlet below Sainam and have the whole channel dredged deep from Tsingyuen to the sea. Fortunately, in our improvement of the navigation of the Canton Delta, we have to do the same thing; so this one work will serve two purposes.

The remedy for the West River is that the shallow part just at its junction with the sea between Wangkum and Sanchoo islands should be trained by walls on both sides—a long one on the left, and a short one on the right—so as to concentrate the current to cut the river bed here to a depth of 20-ft. or more. In this way, a uniform depth is secured, for after passing the Moto Entrance the West River has an average depth of 20 to



MAP IV

30-ft. right along its whole course through this delta. With a uniform depth all the way to the sea, the undercurrent will run quicker and drain off the flood water more rapidly. Besides the deepening process, both shores should be regulated so as to give a uniform width to the channel. Midstream shoals and islands should be removed.

The East River Valley does not suffer so severely from floods as those of the other two rivers, the West and the North, and its remedy will be provided in the regulation of the river for navigation. This will be dealt with in that connection.

Second, the problem of navigation in the Canton Delta in connection with the three rivers. In dealing with this question we commence with the West River. In former days the traffic between the West River Valley and Canton always passed through Fatshan and Samshui, a distance of about 35 miles. But since the silting up of the Fatshan Channel below Sainam, the traffic has to take a great detour by descending the Pearl River southeastward as far as Fumen, then turn northwest into the Shawan Channel, then southwest into the Tamchow Channel and then west into the Tailiang Channel and south into the Junction Channel and Maning Reach. Here it enters into the West River and runs a northwesterly direction up to Samshui Junction on this river. The whole journey covers a distance of about 95 miles, which compared with the old route is longer by 60 miles. The traffic between Canton and the West River Valley is very great. At present there are many thousands of steam launches plying between Canton city and the outlying districts, and more than half of that number are carrying traffic to and fro on the West River. Every boat has to run 95 miles on each trip whereas if the channel between Samshui and Canton is improved, the distance would be only 35 miles. What a great saving it will be!

In our project to improve the Canton Approach and Harbor, I suggested the training of a deep channel from the sea to Whampoa and from Whampoa to Tamchow Channel. We now have to prolong this channel from its Tamchow Junction up to Samshui Junction on the West River. This channel should be made at least 20-ft. deep so as to join the deeper water of the West River above the Samshui Junction. And the same depth should be maintained in the North River itself some distance above Samshui, so as to give facility for the navigation of larger vessels up the river when the whole waterway is improved.

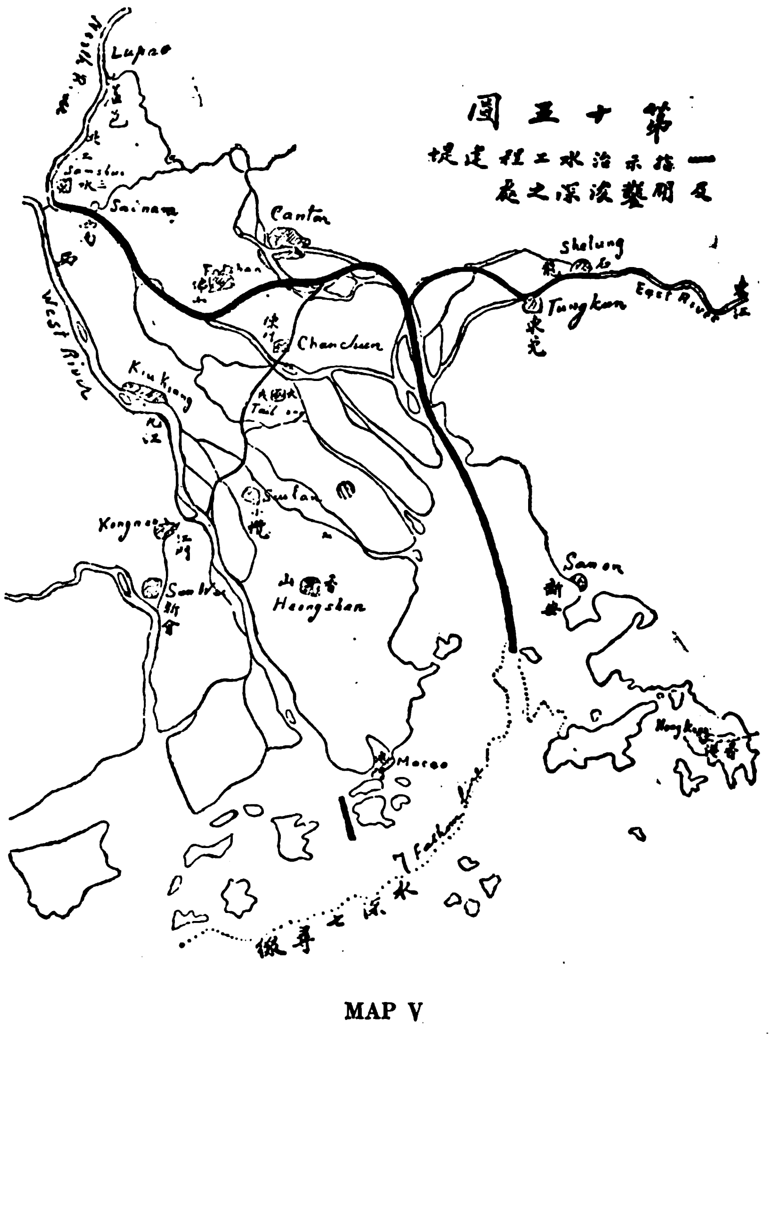
To improve the East River for navigation in the Canton Delta we should concentrate the current of its estuaries into one single outlet by using the right channel which joins the Pearl River at Davids Island, thus deepening the channel as well as shortening the distance between Canton and the East River districts when the upper part of the river is improved.

Another improvement in the Canton Delta for navigation is the opening of a straight canal between Canton city and Kongmoon so as to shorten the passage of the heavy traffic between this metropolis and the Szeyap districts. This canal should begin by staightening the Chanchun Creek south of Canton as far as Tsznai. Then crossing the Tamchow Channel it should enter into the Shuntuck Creek and follow this creek to its end emerging into the Shuntuck Branch at right angles. From there, a new canal must be cut straight to the turn of the Tailiang Channel near Yungki, then the canal should follow this channel through Yellow Reach as far as the Junction Bend. Here another new canal must be cut through to the Hoichow Creek, then it should follow Kuchan Channel to the main channel of the West River, and crossing it enter into the Kongmoon Branch. Thus, a straight canal can be formed between Canton Kongmoon. In order to understand the improvement of the Canton Delta more clearly see Maps IV and V.

Third, the problem of reclamation. A very profitable undertaking in the Canton Delta is the reclamation of new land. This process has been going on for centuries. Many thousands of acres of new land are thus being added to cultivation from year to year. But hitherto all the reclamation has been effected by private enterprise only, and there are no regulations for it. So sometimes this private enterprise causes great detriment to public welfare such as blocking up navigable channels and causing floods. A glaring case is the reclamation work just above the Moto Island, which blocks more than half of the Main Channel of the West River. In the regulation of the West River, I propose to cut this new land away. In order to protect the public welfare, the reclamation work in this Delta must be taken up by the State and the profits must go to defray the expenses of improving this waterway system for navigation, as well as for the prevention of floods. At present, the area that can be gradually reclaimed is great in extent. On the left side of the Canton Estuary, the available area is about 40 square miles, and on the right side, about 140 square miles. On the estuaries of the West River from Macao to Tongkwa Island, there is an available area of about 200 square miles. Of the three hundred eighty square miles, about one-fourth would be ready for reclamation within the next ten years. That is to say, about 95 square miles could be reclaimed and put to cultivation within a decade. As one square mile contains 640 acres and one acre six *mow*, so 95 square miles will equal to 364,800 *mow*. As cultivated land in this part of China generally costs more than fifty dollars a *mow*, so, if fifty dollars be taken as the average rate, the value of these 364,800 *mow* would amount to $18,240,000. This will help a great deal to defray the expenses of improving the waterway for navigation and for preventing floods in this Delta.

(*b*) THE WEST RIVER.

The West River is at present navigable for comparatively large river steamers up to Wuchow, a distance of 220 miles by water from Canton, and for small steamers up to Nanning, a distance of 500 miles from Canton, at all seasons. As for small crafts, the West River is navigable in most of its branches, west to the Yunnan frontier, north to Kweichow, northeast to Hunan and the Yangtze Valley by the Shingan Canal.



MAP V

In improving the West River for navigation I shall divide the work into subsections as follows:—

(1) From Samshui to Wuchow.
(2) From Wuchow to the junction of the Liukiang.
(3) Kweikiang or the North Branch of the West River from Wuchow to Kweilin and beyond.
(4) The South Branch from Shunchow to Nanning.

(1) From Samshui to Wuchow. This part of the West River is generally deep and does not need much improvement for vessels up to ten-foot draught excepting at a few points. The midstream rocks should be blasted and removed and sand banks and dilating parts should be regulated by submerged dykes to secure a uniform channel and to make the velocity of the current even, so that a stable fairway could be maintained all the year round. The traffic of this river would be sufficiently great to pay for all the improvements which we propose to make.

(2) From Wuchow to the Junction of Liukiang. At this junction, a river port should be built to connect the deep navigation from the sea and the shallow navigation of Hungshui Kiang and the Liukiang which penetrate the rich mineral districts of Northwest Kwangsi and Southwest Kweichow. This port will be about fifty miles from Shunchow which is the junction of the Nanning branch of the river. So here we have only to improve a distance of fifty miles, for the improvement of the river between Shunchow and Wuchow will be included in the plan for the Nanning Port. Dams and locks would be necessary to make this part of the river navigable for ten-foot draught vessels. But these dams at the same time would serve the purpose of producing water power.

(3) Kweikiang or the North Branch of the West River from Wuchow to Kweilin and beyond. The improvement of Kweikiang is more difficult for, as Kweikiang is smaller, shallower and has more rapids along its course, its improvement will be more difficult than that of the other parts of the waterway. But this will be a very profitable proposition in this Southern waterway project, for this river not only serves the purpose of transportation in this rich territory but will serve as a psasage for through traffic between the Yangtze and the West River valleys. The improvement should commence from the junction at Wuchow up to Kweilin, and thence upward to the Shingan canal, then downward to the Shang River, and thereby connecting with the Yangtzekiang. A series of dams and locks should be built for vessels to ascend to the interwater shed canal and another series should descend on the other side. The expenses of building these two series of dams and locks could not be estimated until accurate surveys are made. But I am sure this project will be a paying one.

(4) From Shanchow to Nanning. This portion of the Yuhkiang is navigable for small steamers up to Nanning, the centre of commerce in South Kwangsi. From Nanning small crafts can navigate through the Yuhkiang as far as the east border of Yunnan, and through Tsokiang as far as the north border of Tongking. If this waterway be improved up to Nanning, then it would be the nearest deep river port for the rich mineral districts of the whole southwest corner of China, which includes the whole province of Yunnan, a greater part of Kweichow and half of Kwangsi. The immediate neighborhood of Nanning is also very rich in minerals, such as antimony, tin, iron, coal and also in agricultural products. So to make Nanning the head of a deep water communication system will be a paying proposition. To improve the waterway up to Nanning, a few dams and locks along its course will have to be built for vessels of ten-foot draught to go up as well as for water power. The expense for this work cannot be estimated without detailed surveys but it would probably be much less than the improvement of Kweikiang from Wuchow to the Shingam Canal.

(c) The North River.

The North River from Samshui to Shiuchow is about 140 miles long. The greater part of its course is confined in the hilly districts, but after it emerges out of the Tsingyuen Gorge it comes in to a wide, open country, which connects with the plain of Canton. Here the dangerous floods occur most often. Since the silting up of its proper outlet below Sainam, the North River from that point up to the gorge has become shallower every year, so the dykes at the left side, that is, on the side of the plain, often break thus causing the inundation of the whole plain above Canton. Thus the regulating of the river at this part has two aspects to be considered: First, the prevention of floods and second, the improvement for navigation. In dealing with the first aspect nothing could be better than deepening the river by dredging. In the improvement of the Canton Approach and Harbor and also of the Canton Delta, we have to cut a deep channel right from the deep sea up to Sainam. In the improvement of the lower part of the North River, we have simply to continue the cutting process higher up until we have a deep channel, say 15 to 20-ft. as far as the Tsingyuen Gorge, either by artificial or natural means. By this deepening of the bottom of the river, the present height of the dikes will be quite enough to protect the plains from being flooded

In dealing with the second aspect, as we have already deepened the part of the river from Sainam to the Tsingyuen Gorge for flood prevention, we have at the same time solved the navigation question. It has now only the upper part to be dealt with. I propose to make this river navigable up to Shiuchow, the centre of commerce as well as the centre of the coal and iron fields of Northern Kwangtung. To improve the part above the gorge for navigation, dams and locks should be built in one or two places before a ten-foot draught vessel can ascend up to that point. Although this river is parallel with the Hankow-Canton Railway, yet if the coal and iron fields of Shiuchow are properly developed, a deep waterway will still be needed for cheap transportation of such heavy freight as iron and coal to the coast So to build dams for water power and to construct locks for navigation in this river will be a profitable undertaking as well as a necessary condition for the development of this part of the country.

(d) The East River.

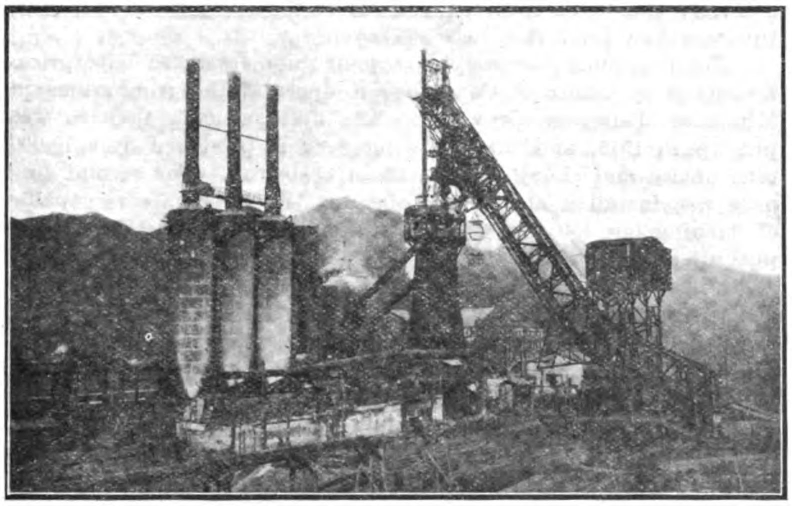
The East River is navigable for shallow crafts up to Laolung Sze, a distance of about 170 miles from the estuary at the lower point of Davids Island near Whampoa. Along its upper course, rich iron and coal deposits are found. Iron has been mined here since time immemorial. At present most of the utensils used in this province are manufactured from the iron mined. So to make a deep navigable waterway up to these iron and coal fields will be most remunerative.

To improve the East River for navigation as well as for flood prevention, I propose to start the work at the lower point of Davids Island as stated in the improvement of the Canton Approach. From here, a deep channel should be dredged up to Suntang, and a mile above that point a new channel should be opened in the direction of Tungkun city, by connecting the various arms of water between these two places and joining the left branch of the East River immediately above Tungkun city. All other channels leading from this new channel to the Pearl River should be closed up to normal water level so as to make these closed-up channels serve as flood outlets in rainy seasons. Thus by blocking up the rest of the estuaries of the East River, all the water would form one strong current which will dredge the river bottom deeper, and maintain the depth permanently. The body of the river should be trained to a uniform width right along its course up to tidal point, and above this point, the river should be narrowed in proportion to its volume of water. Thus the whole river would dredge itself deep far up above Waichow city. The railway bridge at the south side of Shelung should be made a turning bridge so as to permit large steamers to pass through it. Some sharp turns of the river should be reduced to gentle curves and midstream obstacles should be removed. The portion of the river above Waichow should be provided with dams and locks so as to enable ten-foot draught vessels to ascend as near as possible to the iron and coal fields in the valley.

Part III.—The Construction of the Southwestern Railway System will be published in next issue.—Ed

Iron Production in China and its Outlook

THE fact that China is known to be rich in natural resources has led many people to look with complacency and equanimity upon the question of iron production in this country. Indeed the mines, for example, are still undeveloped and China's wealth is only potential, not actual.



A blast furnace at Penchihu, Manchuria, with triple heating stoves on left

But, say these easy-chair prophets, the Republic can afford to wait, for sooner or later all of its vast resources will be tapped, opened as well as developed, and then we will behold the halcyon days of overflowing prosperity. All this patting oneself on the back, however, is far from reassuring to those who are really in the know of things; for, as a matter of fact, except in the possible exception of coal, China's supply of valuable minerals is by no means inexhaustible. This is conspicuously illustrated in the case of iron and steel.

According to the International Geological Congress, 1910, and the latest researches of the American Mining Engineers Association, the world's present as well as future supply of iron is distributed as follows (*the figures are all in million tons*):—

Country	Present Ore	Present Amount of Iron	Future Ore	Future Amount of Iron
U.S.A.	4,258	2,305	75,105	37,222
Newfoundland	3,635	1,961	Very rich	Very rich
Mexico	55	30	Very rich	Very rich
Cuba	1,903	857	1,007	454
Brazil	3,500	2,275	Very rich	Very rich
France	3,300	1,140	Unknown	Unknown
Luxemburg	270	90	Unknown	Unknown
Germany	3,608	1,270	Unknown	Unknown
Belgium	62	25	Unknown	Unknown
England	1,300	455	37,700	10,830
Russia	864	387	1,056	425
Finland	Unknown	Unknown	45	16
Sweden	1,158	740	178	105
Norway	367	124	1,545	524
Greece	100	45	Unknown	Unknown
Austria-Hungary	284	103	424	142
Switzerland	16	1	2	1
Italy	6	3	2	1
Spain	711	349	Very rich	Very rich
Portugal	Unknown	Unknown	75	39
China	500	230	Very rich	Very rich
Japan	64	32	Unknown	Unknown
Korea	110	55	Unknown	Unknown
Australia	136	74	69	37
Africa	125	75	Very rich	Very rich
Total	26,332	12,626	Most rich	

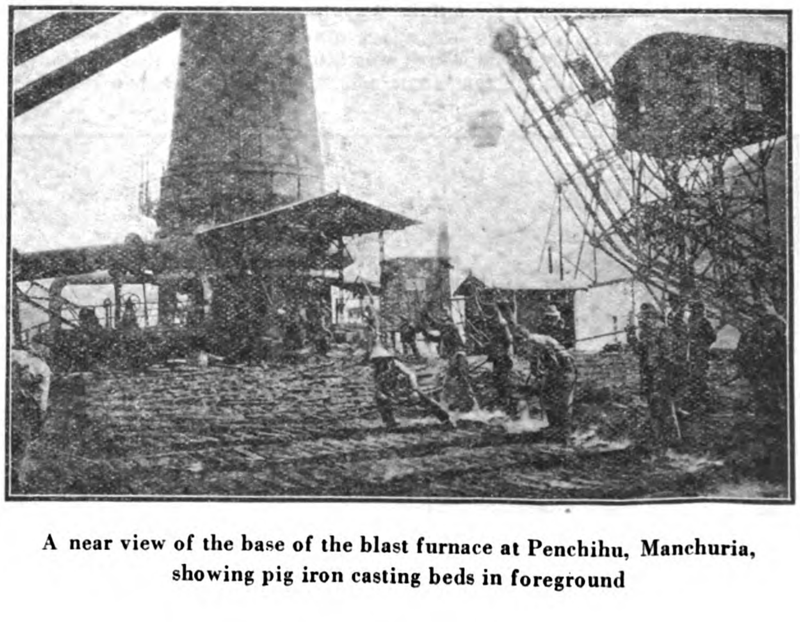
If we take in round numbers the present ore supply of the whole world as 12,900,000,000 tons and the annual output in recent years as 80,000,000 tons, then the supply ought to last at least 160 years. But with increased methods of extracting the ore which are bound to result from improved scientific processes, and especially as the future supply is most rich, there ought to be no difficulty in drawing upon such supply for several thousand years. For example, the annual output in China is 1,000,000 tons or only 1/500th of its present estimated supply, whereas the production in Japan is also 1,000,000 tons but corresponding to one-sixtieth of its supply.

In other words, the production in this country is to-day still a relatively unimportant factor, being equivalent to less than one-fiftieth of the world's total annual output. On the one hand the ore produced by the native-worked mines in Shansi, Hunan, and Szechuan, etc., is generally considered as of inferior grade by foreign experts; and on the other hand the mines in Shensi, Kansu, and Sinkiang, though still unexplored, can hardly count at present, however rich in superior grade ore they may be, for the simple reason that they are so inaccessible by the lack of good communications. Therefore, at best China's production is on a par with that of Austria-Hungary or Spain, but is certainly a long way behind that of Europe or the United States.

Iron has been mined for centuries in China, and even in ancient times the industry was looked upon as an important source of revenue to the national treasury, this of course entailing the necessary appointment of officials to exercise supervision, etc. The most reliable historical records give the following interesting data:

Dynasty	A.D. Date	Annual Output in Catties.	Annual Output in Tons.
T'ang	806	2,070,000	1,232
T'ang	847-859	532,000	317
Sung	1049-1053	7,241,000	4,310
Sung	1078	5,501,097	3,274
Sung	1166	880,300	524
Yuan	1328	884,563	527
Ming	1373	7,460,000	4,011

Thus, according to the ancient records, the annual production never exceeded 5,000 tons. This total seems hardly complete or exhaustive, considering that the native-worked mines which to-day employ practically the same primitive methods as before, can now produce an annual turnover of almost 180,000 tons. At any rate, modern methods were not introduced until 1896 (the 22nd year of Kuanghsü) when modern furnaces were installed at the Hanyang Iron Works. In 1915 (the 4th year of the Republic) the Penhsihu Company, in Fengtien province, was established, and these two combined now turn out approximately 200,000 tons a year. The following represent the latest available returns for the various provinces. They are translated



A near view of the base of the blast furnace at Penchihu, Manchuria, showing pig iron casting beds in foreground

from a recent number of the "Journal of the Ministry of Agriculture and Commerce," Peking:—

Province.	Ore.	Cast Iron.	Steel.
Fengtien*	76,843 tons	50,911 tons	*Nil*
Honan	36,500 ,,	14,400 ,,	,,
Shansi	212,570 ,,	70,000 ,,	,,
Anhui	6,100 ,,	2,590 ,,	,,
Kiangsi	4,470 ,,	1,420 ,,	,,
Fukien	5,540 ,,	2,600 ,,	,,
Chekiang	320 ,,	110 ,,	,,
Hupeh†	551,289 ,,	136,650 ,,	55,850
Hunan	106,200 ,,	35,000 ,,	*Nil*
Shensi	3,750 ,,	1,250 ,,	,,
Kansu	1,200 ,,	400 ,,	,,
Sinkiang	500 ,,	170 ,,	,,
Szechuan	71,150 ,,	23,720 ,,	,,
Kwangtung	1,650 ,,	550 ,,	,,
Kwangsi	3,200 ,,	1,060 ,,	,,
Yunnan	27,800 ,,	9,260 ,,	,,
Kueichow	18,060 ,,	6,020 ,,	,,
Total	1,126,942 ,,	355,891 ,,	55,850

It is estimated that of the country's entire output over 450,000 tons of ore contain iron, one-third of this may be assigned to the mines worked by old, native methods, another third to those worked by modern improved methods, the rest to that portion which is exported to Japan to be refined.

The outlook of production in this country may be gauged from an understanding of several important factors. First and foremost, of course, is the output of the Hanyehping Company. In regard to this concern, it will be remembered, the Chinese Government agreed in 1915, as a result of the Japanese Twenty-one Demands and consequent ultimatum that it would not confiscate the said company, nor, without the consent of the Japanese capitalists, convert it into a state enterprise, nor cause it to borrow or use foreign capital other than Japanese. In 1917 the Ta-yeh mines produced over 630,000 tons. Of this total 60 per cent. contained ore of which 280,000 tons were smelted by the Hanyang Iron Works and 320,000 tons were exported to Japan. The last was in accordance with the agreement concluded in 1913, which provided that for a period of 40 years (namely from 1914 to 1953) the Hanyehping Company would sell a total of 15,000,000 tons of first-class ore to Japanese ironworks, exclusive of quantities already contracted for. Beginning with 1919 it was understood that this quantity was to be increased by 50,000 tons until the annual turnover would reach 500,000 tons.

The Hanyang Iron Works has at present two old-pattern furnaces, each of which is capable of turning out 100 tons of pig iron a day and two new smelting furnaces the capacity of each being 200 to 250 tons of pig iron a day. In 1917 the Works smelted over 149,800 tons of pig iron. Of this amount 60,000 odd tons went to Japan, 14,000 tons were consumed in the country, and the rest were transferred to be wrought into steel.

* In 1916 the output at Penchihu was 71,373 tons of ore and 49,211 tons of iron.

† In 1915 the output at Tayeh was 549,789 tons ore; that of Hanyang Iron Works was 135,781 tons iron, and 295,484 tons ore exported.

The steel-making department has six Siemens-Martin furnaces, each capable of producing 30 tons a day. In 1917 the steel output was approximately 60,000 tons.

The Ta-yeh Iron Works have recently put up two new smelting furnaces, each with a capacity of 450 tons a day, or an aggregate of 280,000 odd tons of cast iron a year. According to the above contract of 1913 the Works would have to supply, within forty years, a total of 8,000,000 tons. In 1917 a new agreement was entered into, creating a joint Sino-Japanese Steel Works located in Kiushiu, and the Hanyehping Company was to supply 60,000 tons of cast iron a year. The scheme, however, was to be enforced only after the above-mentioned new furnaces had been installed at Tayeh.

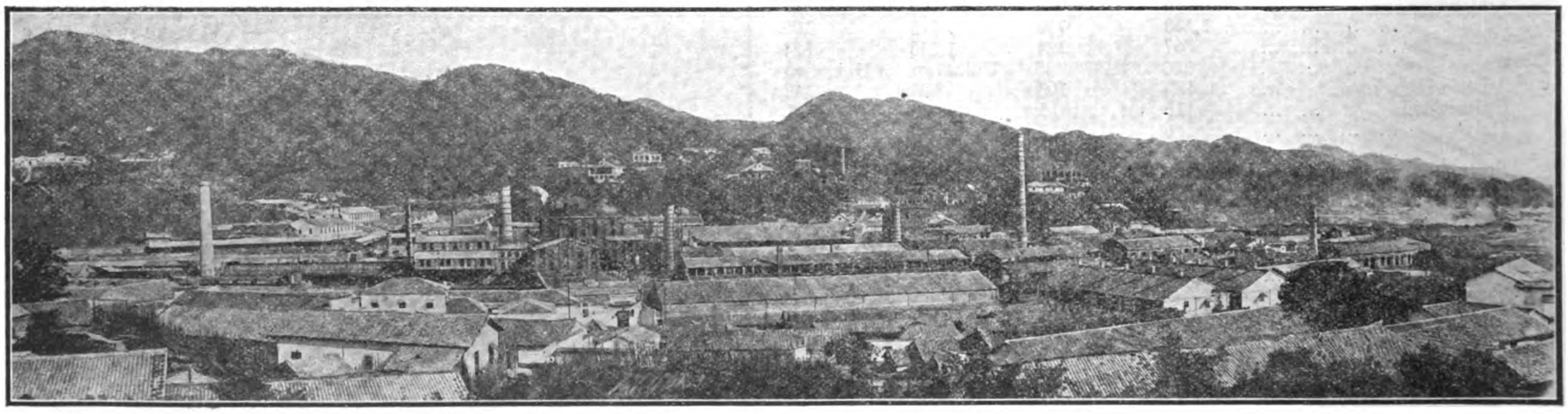
The Penchihu Company is a joint Sino-Japanese enterprise. Promoted by Okura & Company, it operates the iron mines in Miaokou, Fengtien province. The first smelting furnace was put up in 1915, and the following year it produced over 70,000 tons of ore and about 50,000 tons of cast iron. The second furnace was installed at the end of 1916. Each furnace is capable of turning out 150 tons a day. Late in 1918 it was decided to put up a smaller furnace capable of turning out only 20 tons a day, so that the output might total 100,000 tons a year.

The majority of its production, of course, always goes to Japan. In addition this company also gathers together the poorer ore and sends it to Japan for improvement.

A direct result of the 1915 Japanese Twenty-one Demands is the establishment of the Chenhsing (or Development) Company, another joint Sino-Japanese undertaking. Promoted by the South Manchuria Railway Administration, it operates the iron mines in the Liaoyang and Anshanchan region. (These places were specifically designated in the third exchange of notes respecting mining areas and attached to the second 1915 treaty relating to South Manchuria and Eastern Inner Mongolia). It now has two furnaces, each capable of turning out 250 tons of pig iron a day. It is understood that schemes are under way to instal also a steel plant so as to produce 130,000 tons of steel a year, and as a result of various other improvements it is hoped to increase the output to 800,000 tons of pig iron a year.

The Chinglingchen iron mine is situated in Shantung. According to the Kiaochow Convention, 1898, and the agreement in 1909 for the redemption of foreign mining rights in Shantung, this mine should have been worked by the Sino-German Mining Company and the capital therefor subscribed jointly by Chinese and German merchants. After the allied capture of Tsingtau in November, 1914, it was worked by Japanese, and its output is now reputed to be 200,000 tons a year. Since the cancellation, however, of all German rights and abrogation of German treaties consequent upon the declaration of war between China and Germany this mine, like the Kiaochow-Tsinan Railway, has also *ipso facto* reverted to China. So the future disposal of this mine should be a matter of adjustment between China and Japan when Kiaochow is retroceded and the Kiaochow-Tsinan Railway, etc., is restored to the Republic.

In recent years there are not a few iron mines which are being worked by Chinese merchants, but none of these can produce any steel, although extensive plans are said to be under consideration. Of those which are in actual operation, *e.g.*, the



Panorama of the Pinghsiang Colliery of the Han-Yeh-Ping Coal and Iron Company

Lung-yen mines, near Kalgan, in Chihli Province, as well as those in Shansi, Honan, Kiangsu, Anhui, and Kiangsi, etc.—many are contemplating installing large smelting furnaces. Others are putting up smaller furnaces for refining the ore dust which is specially bought for the purpose. For example, the Woo Shing Company, of Shanghai, buys the ore dust from the Pao Hsing Company of Tang-t'u (Anhui). It has one furnace which smelts from eight to ten tons a day. Started in June, 1918, it contemplates putting up another furnace of 30 tons capacity.

In addition to contracting to supply iron ore, etc., there are also those which contract to supply ore dust in stipulated quantities. The Yu Fan Company, of Fan-ch'ang (Anhui), agreed in 1915 with the Sino-Japanese Industrial Company to provide for forty years a daily supply of 1,000 tons of dust. Accordingly the supplying company's iron mine at T'ao-ch'ung was got ready, as also the light rail for transportation from the mine to the riverside, and delivery was to have been made some time in 1919. The other contracting party has already a foundry in Japan with two furnaces capable of smelting 250 tons a day, and these require a supply of 300,000 tons of ore a year.

The Pao Hsing Company, of Tang-t'u (Anhui), besides supplying the above-mentioned Woo Shing Company, of Shanghai, also contracted with a Japanese firm (Kao Ch'ang Kung Ssù) to supply 102,000 tons of ore from September, 1917, to July, 1919, and with another Japanese company (Ling Mu Company) to supply 32,000 tons of ore from May to August, 1919. The Fu Ming Company and the Li Ming Company, both of Tang-t'u, operating the iron mines of Hsiaokushan and Shanmienshan, also contracted with a Japanese house (Hsiao Ch'ai Shang Hui) to supply for five years a daily supply of 500 tons of ore. Finally, the Pao Hsing Company, of Ch'ang-hsing (Chêkiang)) is also under agreement to supply the above-mentioned Japanese firm of Kao Ch'ang Kung Ssù within three years a total of 300,000 tons of ore.

Now the above bargains may or may not be faithfully carried out, but their existence cannot be overlooked in one's estimate of the outlook of iron production in this country. If, therefore, we base our calculations upon what is actually being done, as well as upon the improvements decided upon, the output for six years (1918-1923), excluding that of the native-worked mines, will be as follows:—

Year.	Output of Various Iron Works.	Ore for Japan.
1918	246,000 tons	400,000 tons
1919	340,000 ,,	930,000 ,,
1920	720,000 ,,	1,000,000 ,,
1921	780,000 ,,	1,100,000 ,,
1922	870,000 ,,	1,150,000 ,,
1923	950,000 ,,	1,150,000 ,,

In other words, there is every prospect of the output of iron works in this country continually increasing. As noted, the above figures do not include the production of mines worked by primitive methods. So the grand total may well be imagined if the latter output is also included, always remembering of course that these native-worked mines will eventually adopt the latest modern methods and appliances, etc. And, given earnestness of purpose, much can be done in six years.

That steel is an imperative need to China is only too evident. The following figures from the Maritime Customs reports show steel imports into this country from 1867 (the 6th year of T'ung-chih) to 1916 (5th year of the Republic), or a period of fifty years:—

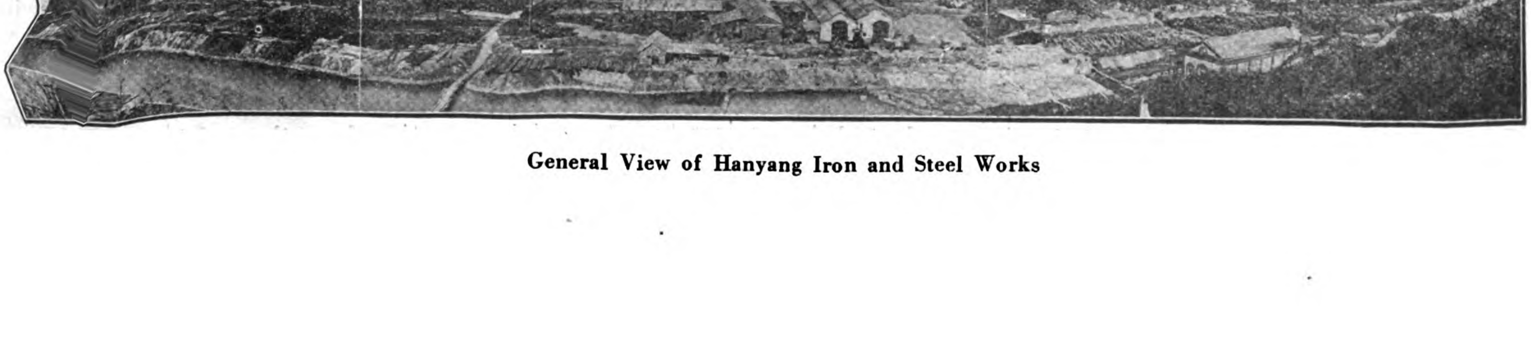
Date.	Average per year.	Increase over previous corresponding period.	Amount of highest year during 10-year period.
1867-1876 ...	190,999 tons	—	27,064 tons
1877-1886 ...	52,019 ,,	32,919 tons	75,266 ,,
1887-1896 ...	84,458 ,,	32,439 ,,	123,000 ,,
1897-1906 ...	110,003 ,,	25,545 ,,	183,044 ,,
1907-1916 ...	186,296 ,,	76,293 ,,	249,855 ,,

Average decennial increase = 41,799.

In other words, the annual increase in steel importation is roughly 4,000 tons. This cannot be considered a representative increase, for since the importation of foreign iron the output of native-worked mines has decreased considerably. Besides, since 1900 when the Hanyang Iron Works began to smelt the ore, and the establishment of the Sino-Japanese Penshihu Company, the output has materially increased. The following table illustrates the iron and steel import and export for the ten years ending with 1917:—

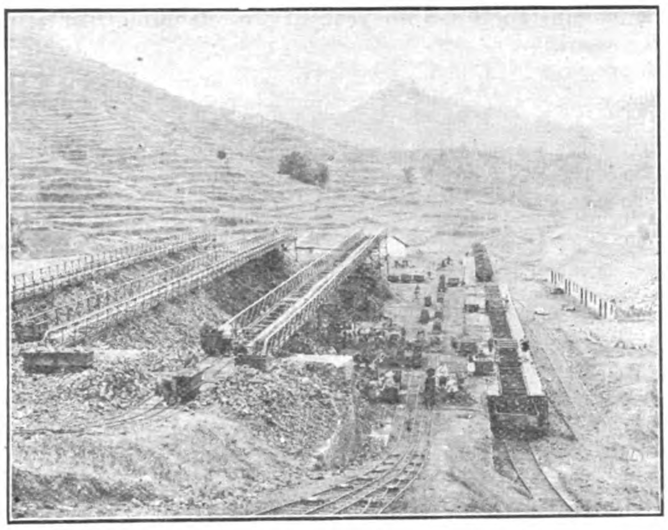
Year.	Steel Imported.	Iron Wares Exported.	Difference between Imports and Exports.	Iron Ore Exported.
1908	158,329 tons	30,408 tons	127,921 tons Import excess	131,350 tons
1909	200,530 ,,	38,092 ,,	162,438 ,, Import excess	87,700 ,,
1910	219,094 ,,	64,348 ,,	154,746 ,, Import excess	130,466 ,,
1911	195,683 ,,	69,792 ,,	125,891 ,, Import excess	110,521 ,,
1912	152,463 ,,	12,400 ,,	140,063 ,, Import excess	201,552 ,,
1913	242,854 ,,	64,939 ,,	177,915 ,, Import excess	269,652 ,,
1914	220,993 ,,	61,519 ,,	159,474 ,, Import excess	294,701 ,,
1915	130,412 ,,	98,628 ,,	31,784 ,, Import excess	304,088 ,,
1916	144,690 ,,	129,648 ,,	15,042 ,, Import excess	278,555 ,,
1917	122,289 ,,	161,987 ,,	39,698 ,, Export excess	304,335 ,,

The total export is therefore about approximating that of import as the years go by if not entirely in excess. This is a remarkable phenomenon, considering that in the present state of China's industrial development her production of iron can hardly be called extravagant. That such is actually the case is perhaps accounted for by the fact that during the last few years the intermittent political unrest and disturbances have produced an atmosphere least conducive to the promotion of industry and commerce. Consequently, there was a surplus of iron for foreign markets, especially in the warring countries which could always absorb more than could be produced. Thus



General View of Hanyang Iron and Steel Works

the price of Hanyang pig iron before 1914 was Tls. 20-30 per ton, but in September, 1918, it soared to Tls. 250 per ton. Since the signing of the armistice, however, it has dropped to Tls. 130-140 per ton; now iron is worth Tls. 70-80 in Shanghai.



The Tiehshan Mine at Tayeh

To mine iron is comparatively easy; but to smelt the ore is less easy, and to refine the iron into steel is still less easy. At present China exports largely pig iron as well as crude iron ware, and imports steel materials. Therefore, notwithstanding the apparent equilibrium between export and import tonnage, there is still a wide discrepancy between export and import values. The appended figures are for the same decennial period as above:—

Year.	Value of Steel Imported. Tls.	Value of Iron Exported. Tls.	Difference in the two Values. Tls. Import excess	Value of Ore Exported Tls.
1908	8,999,770	729,254	8,270,516	296,851
1909	10,742,272	932,463	9,809,809	198,236
1910	11,811,829	1,589,454	10,222,375	294,930
1911	10,720,560	1,595,973	9,124,587	249,921
1912	8,805,067	504,097	8,300,970	456,030
1913	14,752,305	1,430,528	13,321,877	609,744
1914	12,552,822	1,539,352	11,013,470	666,082
1915	9,840,259	2,814,446	7,025,813	698,128
1916	15,441,139	5,943,618	9,497,521	915,104
1917	14,806,120	6,332,198	8,473,922	1,018,479

The moral to be drawn from the above figures is, therefore, plain as daylight: China's steel industry must be quickly developed if the needs of the nation, on the one hand, are to be met, and, on the other, the demands of foreign markets are to be adequately satisfied. With the single exception of the Hanyang Iron Works, there is no other plant which can at present wrought iron into steel. The population of the Republic is generally estimated at 400,000,000, whereas the amount of steel available for consumption is only 400,000 tons. On a per capita basis this would work out at one-thousandth part of a ton per person per year. The amount of iron in China that can be mined at present is over 200,000,000 tons; on a per capita basis this would work out at one-half ton per person. By way of comparison the following table will illustrate the per capita quantity in various countries:—

Country	Per Capita Quantity of Iron Available.	Steel Consumed per Person per Year.
United States	29.2 tons	0.250 ton
Germany	18.7	0.130
England	9.9	0.130
France	31.2	0.130
Russia	2.7	0.030
Japan	0.4	0.040
China	0.5	0.001

The available quantity per capita of iron in the Republic is, therefore, none too plenty, and a great deal requires to be done if the 0.001 ton per capita basis is to be elevated to meet the nation's rapidly increasing demand for iron and steel in developing trade and industry, etc. Consequently, there is considerable spadework yet to be done, and for this purpose the iron conditions in Japan may also be studied, since Chinese iron is fighting so largely in the annual consumption of Japan. According to an eminent Japanese expert the quantity of iron and steel required by Japan for the next ten years is as follows:—

Year	Total Iron Required	Total Steel Required	Grand Total
1918	360,900 tons	1,123,000 tons	1,483,900 tons
1920	430,000	1,123,000	1,553,000
1923	533,800	1,568,000	2,101,800
1925	617,500	1,786,000	2,403,500
1928	744,000	2,111,000	2,855,000

The above estimate of iron required refers only to iron not wanted for making steel. Nor does it include iron imported from foreign countries. If imported iron be put at 92,000 odd tons, the average of recent years, then the total iron and steel required for 1923 would be altogether 2,193,800 tons. In 1916 the total output of iron in Japan was 423,000 tons, but for 1923 the aggregate is estimated at 1,217,000 tons. Therefore, there has been a deficit of 400,000 to 500,000 tons a year in recent years, and in 1923 this deficit will increase to over 1,000,000 tons. Hence the urgent need of importation from China to fill up the gap. The following figures vouchsafed by the Japanese Ministry of Agriculture and Commerce indicate the production of iron and steel within Japan as well as its "spheres of influence," during the next few years:—

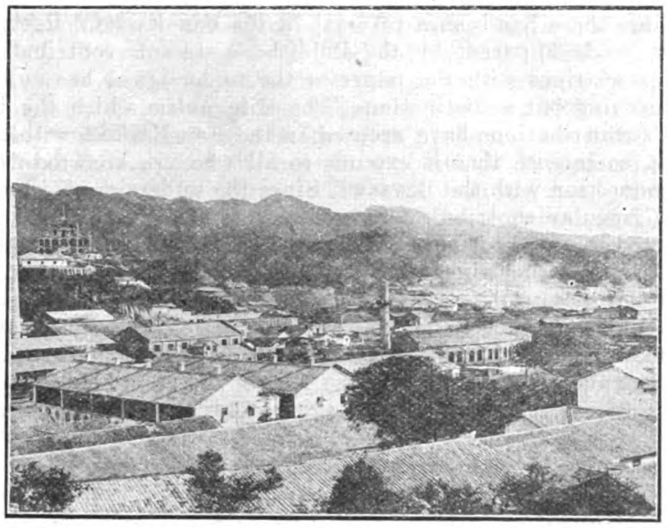
Date	Place	Pig Iron	Steel	Steel Products
1918	Japan	585,000 tons	1,150,000 tons	810,000 tons
	Korea	50,000	15,000	10,000
	Manchuria	110,000	—	—
	Total	745,000	1,165,000	820,000
1919	Japan	820,000	1,600,000	1,140,000
	Korea	100,000	50,000	40,000
	Manchuria	230,000	—	—
	Total	1,150,000	1,650,000	1,180,000
1920	Japan	960,000	1,770,000	1,260,000
	Korea	100,000	50,000	40,000
	Manchuria	250,000	20,000	20,000
	Total	1,310,000	1,840,000	1,320,000
1921	Japan	1,060,000	1,920,000	1,400,000
	Korea	100,000	50,000	40,000
	Manchuria	250,000	60,000	50,000
	Total	1,410,000	2,030,000	1,490,000
1922	Japan	1,110,000	2,000,000	1,470,000
	Korea	100,000	50,000	40,000
	Manchuria	250,000	60,000	50,000
	Total	1,460,000	2,110,000	1,560,000
1923	Japan	1,150,000	2,030,000	1,490,000
	Korea	100,000	50,000	40,000
	Manchuria	250,000	60,000	50,000
	Total	1,500,000	2,140,000	1,580,000

The production of iron and steel in Japan, therefore, shows an encouraging growth from year to year. Nevertheless, despite this growth there will still be a deficit, in 1923, of one million tons of pig iron which, as already noted, will be made good by importation from China. Of Japan's iron output in 1923 of 1,000,000 tons this country will contribute 500,000 tons of ore; and of its two million tons of steel, one-half will be manufactured from the cast iron produced in China. In other words, this country's raw material will go to make up three-fourths of the entire iron and steel produced in Japan.

It is, therefore, this aspect of the question which needs to be borne in mind in one's estimate of the outlook for iron production in China, namely the amount of ore which must be supplied to the island empire under the numerous agreements concluded between Japanese and Chinese merchants. In this connection there is also the agitation among some Sino-Japanese mines to get special exemption from the usual iron taxes, etc.

According to a Peking news agency (December 12, 1919) Mr. Lu Tsung-yu, former Chinese Minister to Japan, petitioned the Cabinet in this sense on behalf of the Lung-kuan and Yen-tung-shan iron mines, of which he is the managing director. Next to the above-mentioned Hanyehping Company this is probably the most valuable concession secured by Japanese capitalists through the medium of willing Chinese friends. These mines are situated in Hsuanhuafu, Chihli province, along the Peking-Suiyuan Railway. Started early in 1919, it is said to be already in full swing. A summary of Mr. Lu's petition is as follows:—

"Iron ore is now required by all leading Powers for military as well as commercial purposes, so it is no surprise that nearly all Western Powers have adopted a high tariff to protect their iron and steel. In view of the importance of iron and steel, the Lung Yen Iron Mining Company was organized with the sanction of the Central Government a couple of years ago. Although this Company was floated with half official and half commercial shares, yet it is an official corporation of the Chinese Republic—a fact which is known to everybody. . . Hence, in addition to the non-payment of iron royalty, the Company prays that the Government will exempt it from the payment at all times of all taxes and duties on ores and raw materials, as well as coke and coal produced by this Company, so that its business will be further developed in the future." etc., etc.



Partial View of the Pinghsiang Colliery

In view of the importance of the request a special conference of the Cabinet Ministers was held to consider the matter. As a result the Cabinet replied as follows:—

"Since the Lung Yen Iron Mining Company was formed with joint official and commercial capital, the Government is willing to assist it as much as possible. Therefore, it is hereby decided that within a radius of fifty miles from the maritime and native customs houses, the iron and steel products of the Company will be exempted from the payment of government duties and taxes. The iron ores, however, of the company are to be taxed in the same way as those of the Hanyehping Company," etc.

Such decision is bound to have a far-reaching effect and soon will be quoted as a precedent by other equally interested ventures.—*Translated from Chinese official documents.*

Speaking at a meeting of the Anti-Opium Society at Peking recently Sir Francis Aglen, Inspector-General of Customs, made the startling statement that during the year 1919 there had been confiscated by the Maritime Customs on discovery during attempted smuggling, 21 tons of opium; 2 cwt. of morphia; and 1½ cwt. of cocaine, heroine and allied drugs. The quantities are simply amazing, but as Sir Francis pointed out, this is undoubtedly but an infinitesimal fraction of the quantity that succeeded in evading the ever-vigilant eye of the Maritime Customs and was actually smuggled into the country.

America Can Profit by Japan's Loss in China

According to Mohan T. Y. Zi, of Shanghai, Japan has lost 90 per cent. of her Chinese trade since the boycott on Japanese goods which started last May. Commissioner Zi, who is a delegate of the Chinese General Chamber of Commerce to the trade convention to be held in San Francisco next May, further claims that Japan had built up a volume of business with China during the war which amounted to hundreds of millions of dollars. This has been seriously damaged since the boycott. He says American cotton exports to China up to the time of America's entry into the war, approximated 10,000,000, and the great bulk of this trade fell to Japan when America could no longer attend to her exports. Japan obtained the raw material from China, converted it into cloth and returned it to China. Since the boycott this cotton market has been left practically open. He says that one of his missions to America is to try to interest American cotton exporters to re-establish their previous commercial relations with China.

He says that to the outside world the trouble between North and South may seem important, but it has no actual bearing on the mercantile and industrial life of China. He declares it is simply political.

He wishes to encourage the motor industry, as it is capable of tremendous development in China. He thinks the Chinese are partial to American motors of modern style if they can be obtained at a low price consistent with quality.

Protest Against Sino-American Mining Deal

Under the leadership of ex-Premier Hsiung Hsi-ling, and ex-Minister of Education, Fan Yuan-lien, and other prominent native gentry of Hunan, the heads of the various educational, industrial and agricultural associations in Changsha have, according to the Asiatic News Agency, just petitioned Gen. Chang Chin-yao, military governor and acting civil administrator of Hunan, with reference to the establishment of a mining ore refining factory by the American Pacific Development Corporation and the mining bureau of Hunan. According to the petition of the native gentry, the people of Hunan have no objection in view of the friendly relations between China and the United States at the present moment, but as the Shuikoushan and other mining properties belong to the province of Hunan, no official can sign any agreement for co-operation with foreigners without the previous approval of the provincial assembly at Changsha. Hence the provincial administration has been asked by the petitioners to postpone the proposed Sino-American co-operation for the establishment of the ore refinery at Changsha or any other city in Hunan until the unification of the north and the south has been effected when a properly-representative provincial assembly will be instituted at Changsha which will then accord the necessary legal rights on the Sino-American co-operation.

At the same time, the petitioners have also sent copies of this petition to the Peking government and the American Legation requesting the postponement of the agreement signed by Mr. Chung Yung-mei, director of the mining bureau with the Pacific Development Corporation some time ago by order of military governor Chang Chin-yao and it is said that an advance of two hundred thousand dollars have already been paid over to the provincial government of Hunan by the American promoters.

In connection with this affair, Gen. Chang Chin-yao has just wired to the Peking government stating that there is nothing in the agreement which may be misconstrued as infringing the rights of China or the rights of Hunan province so that the central government should telegraph to the south-western leaders and others who are concerned about it to dispel misunderstndings or misconceptions; and the enforcement of the agreement will give Hunan immense benefit.

The Proposed Abolition of Likin

The question of the abolition of the likin tax in China is again on the tapis, and in this connection the Chinese Government recently forwarded the following note to the Diplomatic Corps at Peking:—

The Chinese Government has long had in mind the question of the abolition of likin. As the question, however, concerns the annual income of the Central Government, and as the provinces depend on likin largely for their administrative expenses, it has naturally been found difficult to arrange for its abolition, unless some other reliable form of income were found to take its place. In May of last year this Ministry received from the Ministers of the Powers which had sent representatives to sign the revised tariff agreement communications stating that the matter of the levying of internal duties in China was one which was having an extremely injurious effect on the advancement of trade between China and foreign nations, and that they greatly hoped that some method might be devised for the abolition of such duties. Again on January 22nd of the present year the British Minister addressed a Note to this Ministry in which he stated:—

> "The Association of British Chambers of Commerce in China at the time of the recent conference at Shanghai advocated the carrying out of the various clauses of Sections of the Commercial Treaty of the 28th year of Kuanghsu (1902), with the proviso, that before giving the necessary consent to an increase in the import duties, the various Treaty Powers should obtain from the Chinese Government satisfactory guarantees that the Government would not in future proceed to levy any other form of either direct or indirect taxation on goods, reminding the Government also of the earnest hope of every one—namely, that the Chinese Government should become united, a question which necessarily preceded any discussion of revenue collection, for the reason that without a united Government there could be no uniformity of revenue collection."

For this advice the Chinese Government is very grateful. It has to observe that the question of arranging a method for the abolition of likin and the increasing of import duties is one which is engaging the attention at the present moment of the various departments of the Government concerned. It can be clearly stated in advance that when, in future, the time comes that likin is actually abolished and import duties are increased likin will again be levied, either directly or indirectly, in the interior of China on goods of foreign nations on which there has already been paid the increased import duty. The praiseworthy sentiment expressed by the British Minister that schemes for a uniform collection of revenue must be preceded by plans for a unified Government meets with the hearty concurrence of the Chinese Government. There are, however, at present, certain circumstances in the internal administration of China which unavoidably prevent the unification of the country by force. On the other hand, there has been in the past unity as regards foreign questions. In view, moreover, of the fact that the abolition of likin and the increasing of import duties is a national project, the Chinese Government profoundly believes that the Northern and Southern provinces cannot but act in accord in this matter—this, it is believed, can also be confidently stated in advance.

There is still another phase of the question that demands consideration:—After import duties have been increased and the Chinese Government has completely abolished likin, and it is found after due consideration of the true circumstances of the matter, that the additional import revenue is not sufficient to make up for the losses arising out of the abolition of likin, the Chinese Government cannot but make some arrangement for making up the deficit. In consideration of the fact that the Ministers of the various powers concerned agreed, at the time, that, in view of the fact that the fixing of prices of commodities under the Revised Tariff had been made during the period of the European war, last year, they were to be subject to further revision two years after the conclusion of peace, therefore the Chinese Government considers that before the procedure now in contemplation for the increasing of import duties and the abolition of likin has actually been put into force it should request the various foreign Powers concerned to take part in a prior revision of the import tariff to make the listed values of commodities correspond with actual values, and to raise an income sufficient, also, to compensate for the loss due to the abolition of likin.

In view of the foregoing considerations, the Chinese Government expresses the hope that the Powers concerned will carry out the arrangement above proposed, so that the friendly relations of the several nations with China may be strengthened. This Ministry has the honor to bring to your notice the fact of the Chinese Government's intention to proceed at once with the increasing of import duties and the abolition of likin, and has the honor to request that you inform your respective Governments accordingly.

Correspondence

PEKING, March 13, 1920.

TO THE FAR EASTERN REVIEW,
SHANGHAI.

Since there has been a reversal in the FAR EASTERN REVIEW'S policy, made apparent by the Publisher's recent contributions, such associations with the paper as the undersigned has enjoyed are anything but a distinction. The antagonism which the Publisher's contributions have aroused in the Far East is, with good reason, so intense that it extends to all who are known to have any connection with the REVIEW. Since the undersigned, who has been a regular contributor for more than three years and who has acted in an editorial capacity at times, has no more sympathy with the Publisher's new political creed than the general public has, he wishes to disassociate himself completely from a paper which publishes such dangerous and misleading editorial matter, and to announce that he will contribute nothing further to the REVIEW under any circumstances.

RODNEY GILBERT.

Impatience Useless in the China Market

Mr. Ralph Dawson, Vice-President of the Asia Banking Corporation, who recently returned to the United States after spending over a year in the Far East, opened the eyes of many firms as to trade possibilities in the East and how to make the most of them. There can be little question that the average American is impatient to reap the fruit of his labors, and, obviously, from what Mr. Dawson said, this has been against the American salesman newly arrived in China. We have all learnt from our school-days that the Chinese are extremely phlegmatic, and in recent years we have also been taught how averse they are to purchasing new "chops" so long as oldtime goods are available.

As regards the selling policy of American exporters, generally speaking, the establishing and operating of one's own organization offers the greatest promise of substantial success in the Chinese field. In fact, all the outstanding successes among foreign concerns in China have pursued this policy. It is a mistaken idea that only big firms can afford to have their own selling organizations in China. The thing to do is to make a start toward the establishment of a selling organization. Remember that the big, rich Chinese market cannot be rushed. Select a man with good personality, preferably a man who has had experience in the Chinese market. Let him form the basis of your organization in the Orient; let him be of the type that prefers slow growth to meteoric, but uncertain, success. Such a man will automatically build up his selling organization with men who will carry out his ideas. I should say that the finest selling organizations in China, in the future, can be formed from the youth of America—alert, sturdy, courageous young men, with vision, intelligence and the highest degree of stick-to-it-iveness.

The reason one's own organization in China is the most successful is because the business is always under one's own control. A foreign selling agency, whatever its loyalty, may possibly give the preference to one of its own countrymen. With self-organization you control your business always, and furthermore, gain valuable experience as you go along, instead of leaving everything to the agent.

It is vitally necessary that the future witness the development of a perfect co-ordination between the financial and the commercial organizations of America with reference to Chinese trade, and at the back of these efforts must stand a well-defined policy of the Government with respect to American enterprises in China.

Mineral Production in China

By Frank Rhea, U.S. Trade Commissioner

Coal

CHINA, no doubt, has very large, varied, and valuable coal resources, but it is difficult to obtain definite data concerning them. The Japanese have thoroughly proved the fields they control in South Manchuria, at Fushun, Yentai, and Penchihu. The Fushun field on the Fushun Branch of the South Manchuria Railway, 236 miles north of Dairen, contains about 800,000,000 long tons and carries a high percentage of nitrogen, and there is a very complete Mond gas plant, producing a considerable amount of ammonia. The Yentai field near the main line of the South Manchuria Railway, about 225 miles north of Dairen, contains a much smaller quantity of steaming coal. These two fields are controlled by the South Manchuria Railway and are both equipped with modern apparatus; with a total of approximately 20,000 employees, they are now producing about 2,225,000 tons a year.

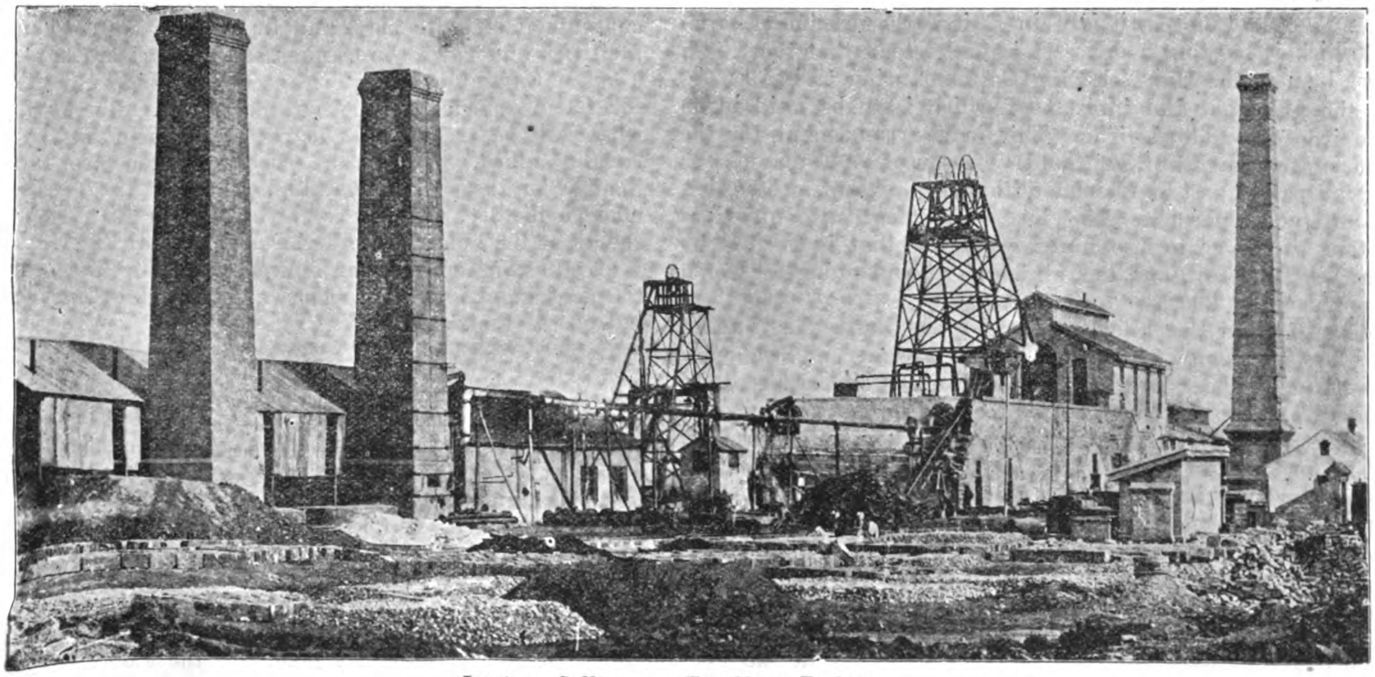
The Penchihu field, 47 miles from Mukden on the Antung Branch of the South Manchuria Railway, while limited as to quantity, contains some very good coking coal. This is of much importance to the Japanese interests in connection with the two 150-ton iron furnaces at Penchihu, the two new 250-ton furnaces of the South Manchuria Railway at Anshan, about 190 miles north of Dairen, and the new iron plant at Pingyang on the Korean Railways in Korea. The coal, iron-ore, and limestone deposits and the iron furnaces at Penchihu are controlled by the Okura Co., of Japan, and the present coal production is about 300,000 long tons a year.

The only other instance in which the writer was able to see data proving the quantity and quality of the coal was that of the Kaiping field, controlled by the Kailan Mining Administration, which is located on the main line of the Peking-Mukden Railway about 80 miles northeast of Tientsin. Here there is a proved amount of about 1,000,000,000 long tons of first-class coal, a considerable portion of which will coke. With about 20,000 men the present production is approximately 3,250,000 tons a year, with a production of about 100,000 tons of coke now produced by the Chinese process. It was stated by a well-informed authority that the Kailan Mining Administration contemplates improvements amounting to approximately $10,000,000 United States currency in the way of washing and by-product processes, these improvements to be undertaken as soon as possible after the end of the war. The greater part of the coal now exported from China proper comes from this field, and the average rail haul to Chinwangtao, the principal coal-exporting port, is about 75 miles. This is the only port of North China on the Gulf of Chihli that is free from ice during the long winters of this section, except Dairen, which is under Japanese control.

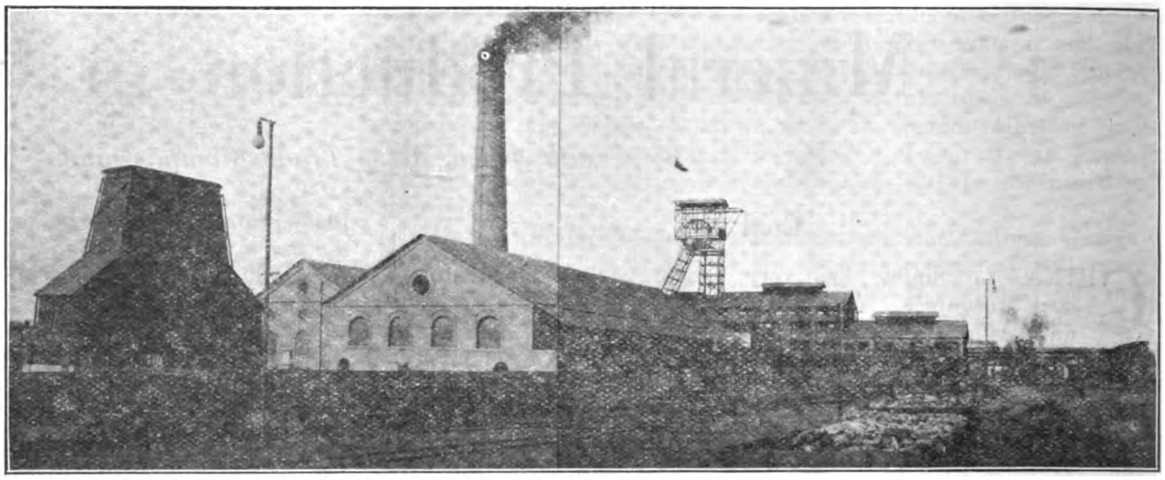
The next largest producing mines are the Pinghsiang collieries of the Han-Yeh-Ping Iron & Coal Co., in Kiangsi, about 260 miles southwest of Hankow. The annual production is about 1,000,000 tons, and all the fuel and coke for the Han-Yeh-Ping Iron Works at Hanyang, near Hankow, come from these mines.

There is no doubt of the fact that extensive and valuable fuel deposits occur in many parts of China, particularly in Chihli, Shansi, Honan, and Kiangsi, but so far as could be learned none of the fields other than those mentioned have been conclusively proved up as to quantity and quality. The best statement of the recent production situation was published in the FAR EASTERN REVIEW for October, 1917. As this publication prepares its data with much care, the following information is given substantially as printed. The total present coal production of China from all classes of mines is about 18,000,000 tons, of which about 8,000,000 tons come from the larger mines where more or less modern methods prevail and which are, in the main, under foreign control or administration. According to figures collected by the Geological Survey of China for the year 1915, the most recent year for which figures are available, the output of the principal mines was as follows:

Name of Mining Enterprise	Location	Province	Nationality	Production in long tons
Kailan Mining Administration	Tangshan-Kaiping	Chihli	Sino-British	2,971,793
Pinghsiang Colliery	Pinghsiang	Kiangsi	Chinese	927,462
Peking Syndicate	Chaotso	Honan	British	480,875
Lincheng Coal Mining Administration ..	Lincheng	Chihli	Sino-Belgian	259,703
Chunghsing Coal Mining Administration	Yishien	Shantung	Chinese	244,825
Tsingching Mining Administration ..	Tsingching	Chihli	Sino-German	179,154
Paoching Co.	Yangchuan	Shansi	Chinese	131,396
Liuhokou Coal Mining Co.	Liuhokou	Honan	do	91,822
Tungshing Co.	Mentowkcw	Chihli	Sino-British	80,000
Subtotal				5,367,030
Fushun Colliery	Fushun and Yentai	Manchuria	Japanese	2,034,856
Penchihu	Penchihu	do	do	275,777
Total				7,677,663



Jamisen Colliery on Tao-Ching Railway



Kailan Mining Administration—The Tongshan Colliery

In addition to the above, the Japanese military administration mined 259,611 tons in 1915 and 443,368 tons in 1916 from the mines along the Shantung Railway, and it was expected by the Japanese authorities at Tsingtao that this amount would be increased in 1917 and again in 1918. In the above-mentioned article the rather surprising statement was made that even now China is importing from 1,000,000 to 1,600,000 tons and that in normal times there would be an excess of imports over exports. Even with the present railways, if adequate equipment and arrangements were provided, there is every reason to think that China should become an exporter of coal instead of an importer. It would appear that many of the developments have not had the possible measure of success because the proving was insufficient to determine the best scheme of development. This applies particularly to the matter of drainage, which has been the cause of trouble in many of the operations.

Iron

It is reasonably certain that China also has important iron-ore deposits, but the obtaining of definite information regarding the proving data was found to be even more difficult than in the case of the coal resources.

The October issue of the FAR EASTERN REVIEW also referred to the iron and steel production of China, stating that at present the total pig-iron production of China, aside from Japanese production in Manchuria, is about 300,000 tons. One-half of this is the output of the Han-Yeh-Ping Co. at Hankow; the remainder, produced by scattered native plants, is nearly all consumed locally.

The Han-Yeh-Ping works consist of two 100-ton and two 250-ton furnaces, but at present one of the 250-ton furnaces is not being operated, on account of lack of power. In addition, there are in course of erection two 400-ton furnaces near Hwangchow, about 70 miles below Hankow, on the Yangtze River. These last furnaces are on the river at the point where the ore is brought from the Tayeh mines by means of a 2-foot-gauge railway. At present about 250 tons a day are converted into steel and iron products, and all the rest of the pig iron goes to the Japanese. This plant has the only rail mill in China, the maximum capacity of which is 120 tons a day. It is understood that there is a Japanese loan to the Han-Yeh-Ping Co. amounting to $12,000,000 (gold), the principal and interest of which is to be paid in 40 years in iron ore and pig iron. This loan arrangement for the pig iron is at the price of $21 (gold) per ton of 2,240 pounds for the 40-year period. It is estimated that the present production cost is $18 (gold) per ton. The loan agreement also provides that 2 tons of ore go to Japan for every one that is smelted by the Han-Yeh-Ping Co., and the minimum amount going to Japan is estimated to be 1,000,000 tons a year.

The two 150-ton Penchihu furnaces of the Okura Co. (Japanese) are now producing about 70,000 tons a year, and the new Anshan plant of the South Manchuria Railway is expected to have the first 250-ton furnace completed and in blast before the end of 1918 and the second 250-ton furnace before the end of 1919. The production from both these plants, as well as that from the new Pingyang plant, in Korea, which may use both fuel and ore from Penchihu, is controlled for Japanese consumption. As soon as the work can be carried out it is planned to install a complete steel plant at Anshan, particularly for the production of plates for shipbuilding, of which Japan is in such urgent need and anxious to have its own supply. In any event, all the production that can reasonably be expected in the next few years will fall far short of taking care of the combined needs of China and Japan, even when one includes all the possible production in Japan proper.

Other Metals

China is said to produce in commercial quantities 26 different minerals, of which antimony ranks first in value. As with the coal and iron resources, there is great and urgent need for scientific investigation of these mineral deposits, so that they can be properly and successfully developed. The transportation of minerals other than coal and iron is at present of no considerable volume and is not likely to influence materially the building of new lines of railway; rather, the building of new lines will influence the development of certain of these mineral resources, which in some cases is now much handicapped on account of slow or expensive transportation.—*"Far Eastern Markets for Railway Materials, Equipment and Supplies."*

Great Trade Future of China

China offers to the United States greater possibilities in trade than does any other section of the world, Mr. Julean Arnold, commercial attaché to the American Legation at Peking, declared before the Institute of Arts and Sciences at Columbia University, New York, recently. Mr. Arnold advocated the establishment of a school at Peking for the instruction of Americans in Oriental trade conditions. "The eyes of the world are on China" he continued, "but while Great Britain and France plan air routes from London to Shanghai and Paris to Peking, the United States contents itself with slow and inadequate trans-Pacific steamship facilities and cable connections scarcely better than mail routes. Tens of thousands of Americans to-day study Spanish to qualify for Latin-American trade but few study Chinese to prepare for what will be the greatest market the world has to offer," Mr. Arnold added. "American school children are taught ancient history but they know nothing of one of the greatest events of modern history, the Chinese revolution of 1911 when nearly one-fourth of the human race declared a republic." He declared that "direful consequences must come sooner or later from an unintelligent handling of problems arising out of our relations with nations of the Far East."

A fund of Yen 370,000 is being raised at Yokohama for the establishment of a Public Library to commemorate the 60th anniversary of the opening of the port and the 30th anniversary of the Municipality. The Library is to be erected in Yokohama Park at a cost of Yen 340,000, and Yen 40,000 will be spent in the purchase of books.

The photograph of the Right Hon. Sir John Jordan published in last issue was specially taken for the FAR EASTERN REVIEW by Mr. Egerton Weatherall, of Peking.

Projected Railway to Serve Tsingtao

EARLY in March arrangements were made by the Board of Communications at Peking for the despatch of a party of engineers to survey the route between Shihchiachuang and Tehchow. This line is projected in connection with the flotation of a Chinese domestic loan of some $30,000,000 bearing interest at 8 per cent. As the construction of a railway in connection with a Chinese domestic loan is a novelty prominent Chinese are endeavoring to discover an explanation for it. The Government itself makes the following statement in the Official Gazette:—

"The Peking-Hankow and the Tientsin-Pukow railways are trunk lines running from north to south, crossed by the Lung-Hai line. The present condition, however, is hardly adequate to satisfy the growing demand of the people of Chihli, Shantung and Shansi Provinces, where production is abundant and business is in a prosperous condition. To meet the situation, the Government purposes to build a railway connecting Shihchiachuang on the Peking-Hankow line with Tehchow on the Tientsin-Pukow railway for a distance of 350 *li*, so as to facilitate communication, not only between the two lines, but with the Grand Canal. This will prove an impetus to the development of the local industries. The topography of the region through which the proposed line is to be built being level, there will be no engineering difficulties and a sum of ten million dollars will be sufficient for its construction. Again, the balance of the Peking-Hankow Redemption Loan and interest thereto amounting to $2,300,000, and another loan amounting to $1,200,000, secured on the Peking-Suiyuan railway, are to be redeemed during the 9th Year of the Republic, and the date for payment drawing near, the Communications Department must make preparations before the payment falls due. In addition; the deficit of the postal, railway, telegraph and steamship administrations during the 8th year having amounted to over 29 million dollars, there is the necessity for the Department of raising the proposed loan."

This explanation does not, according to Chinese who ought know, cover the real object of the loan. They claim that the inclusion of the projected railway is to induce Japanese capitalists to take up the loan bonds in order to secure the construction of a railway which will give almost direct communication between the iron and coal fields of Shansi province and the port of Tsingtao. Already the Japanese have a contract with the Chinese Government for the construction of a railway from the northern side of the Yellow River near Tsinanfu to Shuntehfu, on the Peking-Hankow railway. This line will not serve Japanese interests as well as the one from Tehchow to Shihchiachuang.

The projected railway will connect at Shihchiachuang with the existing narrow gauge line running to Taiyuanfu, which taps a portion of the iron and coal measures of Shansi.

It is argued that Japanese capitalists will secure big advantages by taking up the domestic loan. In the first place the interest is 8 per cent., and no doubt there will be a big discount on the price of the bonds. The Peking Government will do anything to get money at this juncture, and in addition to the discount, it is certain that if the Japanese make stipulations regarding the construction and control of the projected railway the Government will grant them. On the other hand, Japanese capitalists will not benefit as much if they issue a loan to construct the proposed railway from Tsinanfu to Shuntehfu. Railway loans in China are generally made at low interest and less discount than domestic loans, and in addition there are distinct advantages to Japan to have a line built which will immediately tap the mineral resources of Western China, which the road to Shuntehfu would not do.

Certain Chinese organizations are already protesting against the issue of this loan and the purposes for which it is to be used. They know that no Chinese will subscribe anywhere near the amount of the loan, and that, therefore, the railway must be included with the object of inducing others to take up the bonds—and the others most interested in the project are, of course, the Japanese, who will leave no stone unturned to secure access to iron deposits, particularly if other natural products can also be attracted to Tsingtao for shipment. The progress of this loan will be closely watched not only by Chinese but by all foreigners interested in the development of Chinese industries, etc.

The original intention was to build a line from Shihchiachuang to Tientsin, connecting with the Tientsin-Pukow line at Tsangchow, but at the last moment this scheme was turned down in favor of the one to Tehchow. The distance between Shihchiachuang and Tientsin, viâ Tsangchow, is about 160 miles, while from Shihchiachuang to Tehchow it is 230 miles. From Shihchiachuang to Tsingtao, viâ Tsangchow the distance is some 429 miles, while it is 360 miles from Shihchiachuang to Tsingtao viâ Tehchow. Another project that has priority in a sense is the old one of a line from Paotingfu, on the Peking-Hankow Railway, to Tientsin direct, and this seems to be the logical one if economy is to be practised in the development of railways in China. Only about 80 miles of construction would be necessary, we believe, to effect this link-up. In a nut shell the proposition as now under consideration will make Tsingtao the port of shipment for minerals from Shansi, and will cut Tientsin out of opportunities expected from the development of the hinterland which would be traversed by a railway from Shihchiachuang to Tsangchow.

Commenting on the commercial possibilities of the route the "China Advertiser," a Japanese paper, says as follows: "There are no articles worth mentioning which are transported over the Shihchiachuang-Tehchow Route, except straw-braid from Tehchow, and furs and hides from Hengshui and Tahsinchi. Towns and villages found on the line not being in a prosperous state, it will take some time before large mills of any kind can be worked in the district.

"At present, exports chiefly consist of cereals, cotton, groundnut-oil and fruits, which are shipped mostly by junks. But when the proposed railway is built, coal, iron and lime produced in abundance in the western portion can be brought to the eastern part of the country. The principal advantage of the line is the fact that the line can be laid without requiring much capital, with every prospect of bringing large returns.

"Railway receipts will be considerably increased by the construction of the proposed line, because both the Tientsin-Pukow and the Shihchiachuang-Taiyuan Railways being connected by it, goods shipped from Shanghai can at once be sent into the heart of Shansi. A similar benefit will not be enjoyed by the Peking-Hankow Railway, although to it the new line likewise serves as a branch. Goods are now being carried to the north by the Peking-Hankow route, those coming from Shansi being loaded at Shihchiachuang. But the new line will take the shipment from Shansi down to Tehchow, whence by the Grand Canal to Tientsin at less expense. From the financial view-point of the new line alone, however, the scheme will prove a success, because it will connect with the Chengting-Taiyuan Railway and cross the Peking-Hankow and the Tientsin-Pukow Railways, and establish a link between the three lines, to say nothing of the transportation of articles produced in regions along the route."

It will be observed that in these comments reference to Tsingtao, and the possible transportation thereto of minerals from Shansi Province, is carefully avoided, while the paper goes out of its way to mention that goods can be brought to Techow, and thence to Tientsin by the Grand Canal at less expense than formerly. This is a clumsy effort to divert public attention from the real object of the projected railway, but it is not likely to succeed.

Already protests against the project are being lodged by Chinese at Tientsin, as the original scheme was to build a line from Shihchiachuang to a point not far from Tientsin in order to reach the nearest seaport. The new proposal will cut Tientsin out for the benefit of Tsingtao.

General Leonard Wood—A Man of Honor

A Story for Engineers

In the early nineties a young engineer and contractor pursued his vocation in Cuba. He passed three years in the insurrection with the armies of Gomez and Maceo, was in Havana the night the Maine was destroyed, and later went with

Major-General Leonard Wood

the army to Santiago as correspondent of one of the leading American newspapers. At Tampa he met Colonel Leonard Wood and throughout the campaign that followed saw him at Las Guasimas, San Juan Hill, and during the days that intervened before the surrender. He had many opportunities for testing the unfailing sympathy and understanding of the soldier for the correspondent, and the good fellowship and open hospitality that always awaited him at the tent of the Colonel and Lieutenant Colonel of the Rough Riders.

After the war the engineer returned to Cuba. General Wood had cleaned up Santiago and was then Governor General of the Island carrying into effect his simple yet wonderful program of hygiene, sanitation and public improvements which transformed the festering sink of tropical disease into a paradise where the white man could live without fear of death. Amongst these improvements was the erection of a modern cutstone school house at Santiago de Cuba. Bids were advertised for its construction. The engineer based his estimate on the wording of the specifications without taking a trip to the other end of the island to personally investigate conditions. He was awarded the contract at $50,000, deposited his bond of $5,000, and started to Santiago to carry out the work.

The government specifications had overstated the conditions. There were no stone masons. They had to be imported from New York. The stone that according to the government was to be found within a reasonable distance from the site of the building did not exist. Quarry after quarry had to be located and abandoned. The quest finally ended six miles beyond the terminus of the railway at San Luis. Before three months had passed the estimated profits from the contract had disappeared and the engineer faced a loss of $30,000 to finish the job. His capital was small. Money was scarce and hard to borrow. He decided that the easiest way out was to forfeit his bond and let the government engineers finish the work. It meant the end of his contracting business. He would go on the government records as a defaulting contractor.

At this juncture General Wood visited Santiago on a tour of inspection. He examined the work on the school-house. The engineer explained his position and intentions of throwing up a losing contract which he had entered into in good faith by accepting the government specifications as true to fact. The General thought for a moment, and then said: "Finish it, my boy. Then come to me and I will do what is fair and just," and holding out his hand he said "Good Luck," swung into his saddle and rode away with his staff.

The engineer telegraphed at once to his principal in New York and urged that some way be found to comply with the obligation by borrowing the funds and trusting to the honor of General Wood to do what was right when the contract was completed. His principal, a great admirer of the General, replied "Go ahead, I will borrow the money; I will stake my last dollar on the word of General Wood."

The work dragged. It became a race against time to finish it before the government was turned over to the Cubans. The engineer arrived in Havana the day before the flag was to be hauled down. He hastened to the palace and found the General, and told him simply that he had completed the contract.

"How much did you lose"?
"Thirty thousand dollars."
"Come and see me before midnight," the General replied.

In the meantime he telegraphed to Lieutenant S. D. Rockenback, the brilliant young cavalry officer who carried into execution the wonderful engineering improvements in the province of Santiago, and asked him what was a fair and just extra payment for the school-house contract. The answer came back immediately: "$29,000."

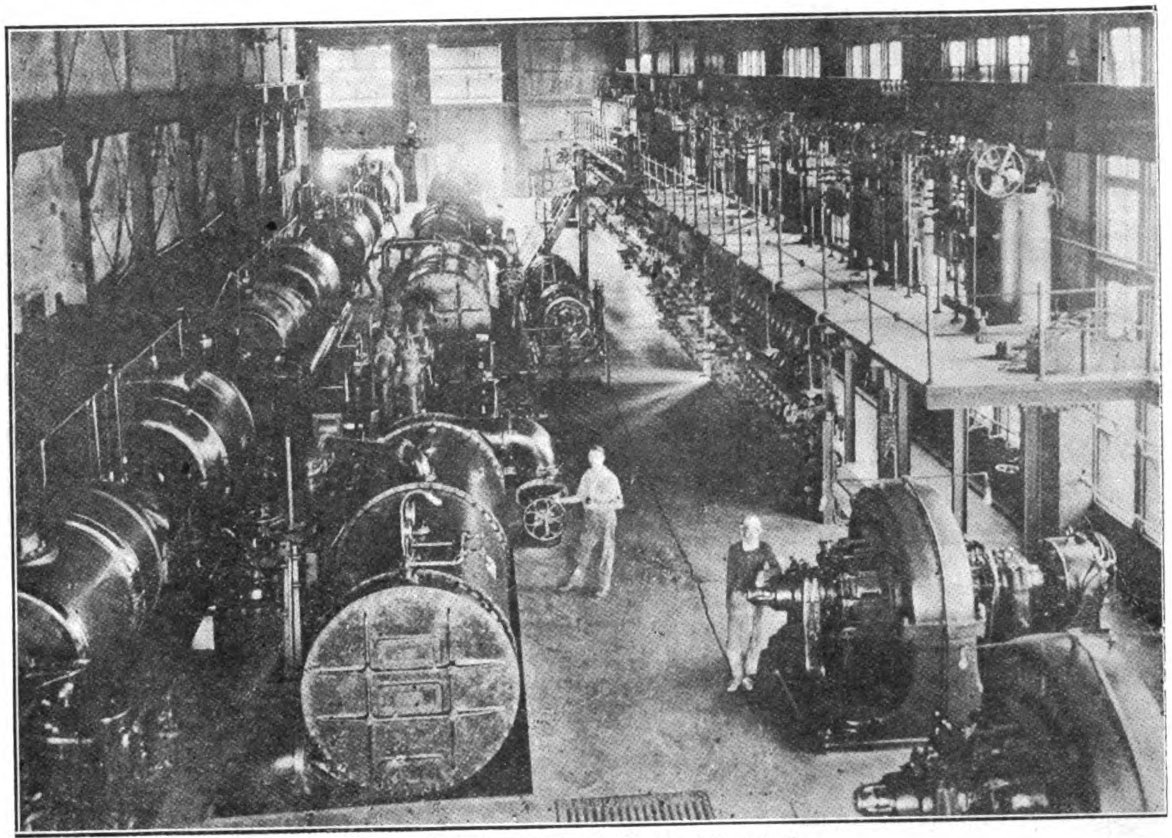
It was after midnight. All other business had been closed when the engineer again saw General Wood. "Lieutenant Rockenback has telegraphed that your claim is just, but you are not entitled for extra payment on certain work that he mentioned. He says you are entitled to $29,000. See Lieutenant McCoy and he will give you a check for that amount." It was the last payment made by the provisional government before handing over the island to the Republic of Cuba.

The engineer and his principal had staked all on the simple word of a man they knew would live up to his promise. He made good his word. He did what was "fair and just."

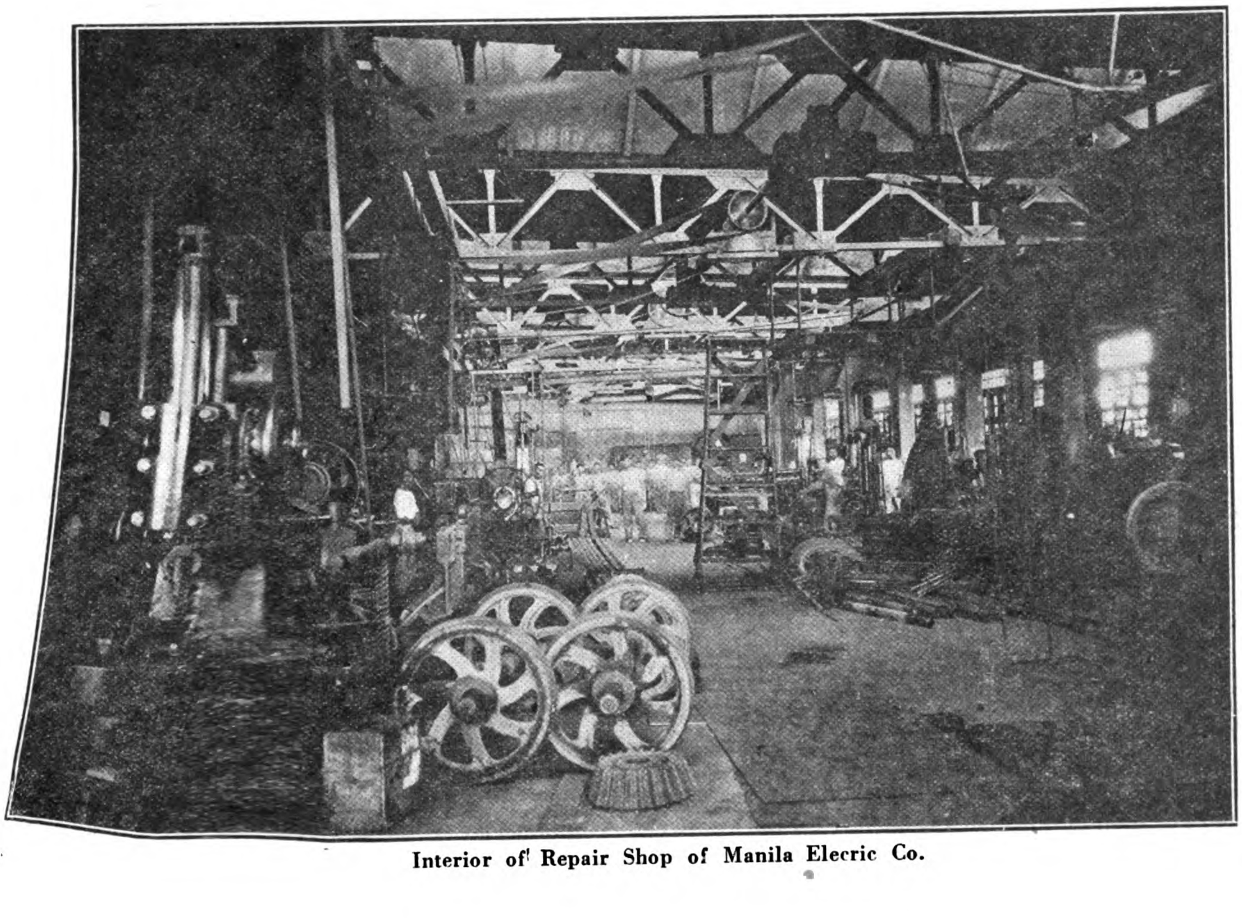
More Electric Current for Philippine Industries

By F. J. Dolan

THE power plant of the Manila Electric Company is probably the largest and the best equipped in operation in the Far East. It is located on the Isla del Provisor, on the Pasig River in the Paco district, Manila.



Interior of Engine Room of Manila Electric Co.



Interior of Repair Shop of Manila Elecric Co.

The boiler plant is especially complete in equipment. It consists of twelve 400-H.P. Babcock and Wilcox water tube boilers. Six of these boilers are being enlarged so as to make their rating 508 horse-power, and are being equipped with the latest type of mechanical stoker by which their output may be increased to 250 per cent. of rating. They are also equipped with forced and induced draught fans.

The company burns coal entirely, most of which is mined in Japan, but it is believed that Philippine mined coal will soon be placed on the market in quantities large enough to supply the great demands of this and other Island industries. The power plant is operated at 200-pound steam pressure.

The generating equipment of this company consists of a 2,000 - kilowatt Westinghouse turbo-generator set, one 1,500-kilowatt Westinghouse turbo-generator set, two 2,500-kilowatt Allis-Chalmers turbo-generator sets and one 5,000-kilowatt turbo-generator set.

Current is generated at 3,300-volt, 2-phase, 60-cycle for general distribution over the city and suburban towns and villages, supplying a population of approximately 300,000 people. This current is reduced to 220-volts, either single or 2-phase, for use in house lighting and industrial purposes, and extends a distance of approximately 5 miles from the power plant.

The street car system is operated from 500-volts of direct current furnished by three 500-kilowatt rotary converters, one 1,000-kilowatt rotary converter and one 1,000-kilowatt motor generator set.

The power plant generates a little less than 4,000,000-kilowatt hours per month, and its peak load reaches an average of 9,100-kilowatts. Almost one hundred and fifty miles of city streets are illuminated nightly by this plant, besides the operation of the street car system and the lighting of numerous stores, theatres and industrial plants. Approximately 10,000 meter-customers and 17,000 flat-rate customers are served. Twelve thousand horse-power of motors are connected to the lines.

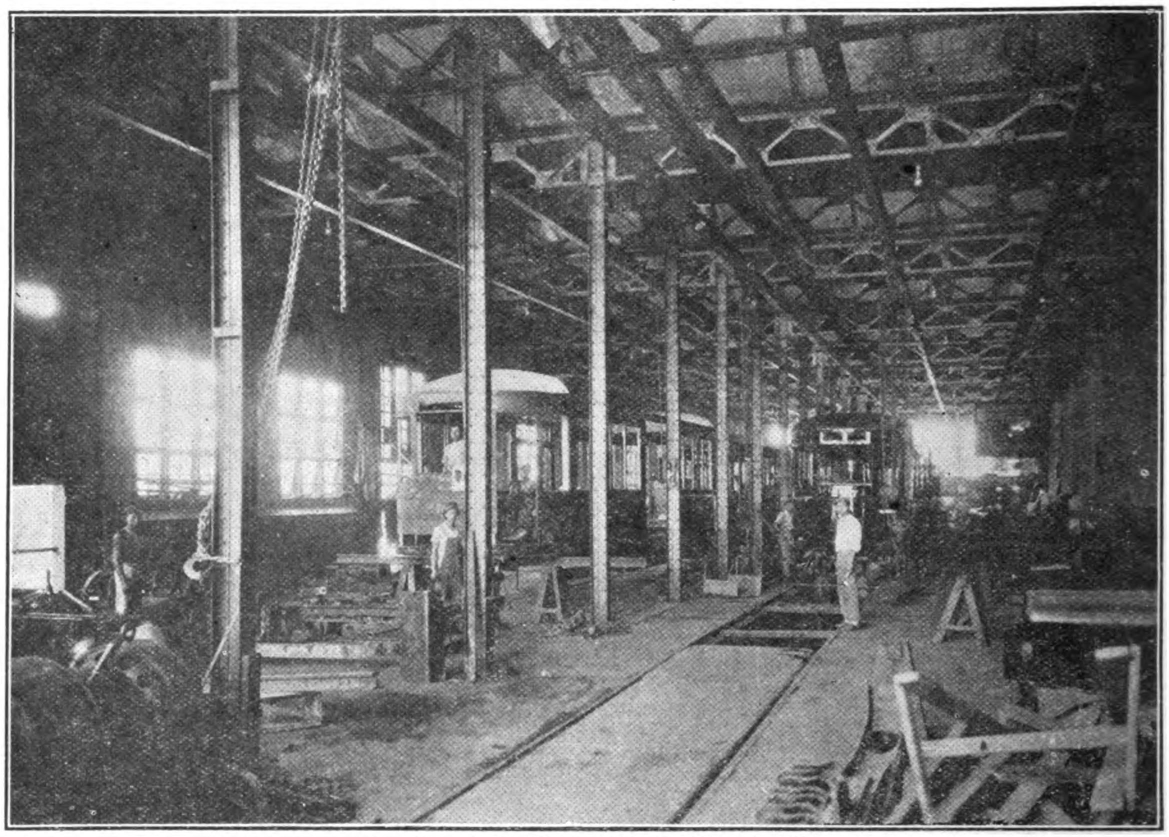
Over two hundred and twenty-five tons of coal are fed

daily to the ever hungry boilers, an amount which far surpasses that being used by any other plant in the Archipelago.

The city of Manila owes to the directors of this enterprise a great debt of gratitude for the absolutely fearless spirit which they have shown in the face of seemingly insurmountable obstacles, and for the faithful service of the public which has always been the watchword of the company.

The benefits which have been derived by this city from the establishment of street railways are many, both direct and indirect.

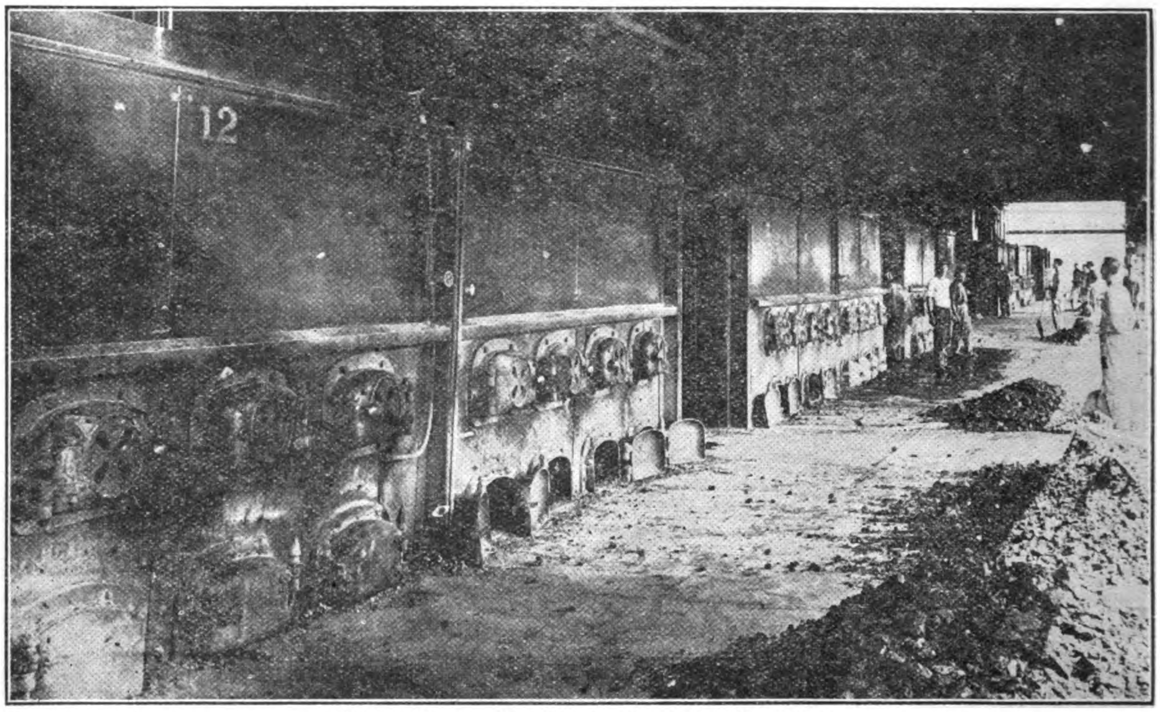
In the outlying districts of the city there have grown up entire barrios whose existence are directly traceable to the fact that they are made accessible by the extension of the car lines. This has created a large class who now own their own homes, but who formerly lived in the more thickly settled and less healthy districts in Manila.



Interior of Car Barn, Manila Electric Co.

Philippine's Trade Report's Meaning

The first monthly trade report of the Philippines this year marks the *début* of the Islands in a period of commercial prosperity heretofore unequaled in the history of the archipelago. Figures recently secured at the Custom House by a FAR EASTERN REVIEW representative show that during the month of January the Islands exported goods amounting to P26,569,989, while the imports reached only P20,442,867, showing a balance of trade in favor of the Islands of P6,127,122. For the same period last year, the balance of trade was against the Islands, the figures being P18,964,354 for imports and only P17,777,156 for exports.



Boiler Room showing twelve 400 H.P. Boilers.

The preponderance of exports over imports last January is due to the picking up of the price of hemp and the greater quantity exported. The figures show that there were sent out of the Philippines last month 12,064,068 kilos valued at P5,277,452, compared with only 1,564,429 kilos worth P966,025 for the same period last year.

The exportation of oil in January was 16,253,976 kilos valued at P10,884,711. For the same month last year the figures were 20,376,020 kilos valued at P12,196,137, which shows a slight decrease as compared with the figures of the corresponding month in 1920.

In cigars, the Philippines exported last month 39,372,067 valued at P2,120,120 as compared with only 36,459,346 for the same period last year worth P1,739,384. The exportation in leaf tobacco in January, most of which went to Europe, was 5,074,844 kilos valued at P3,019,847, as compared with 2,513,784 for the same month last year worth P1,004,491.

The exportation in sugar was 2,187,987 kilos valued at P970,165, as against 1,298,866 kilos valued at P144,003 for the same period last year.

The importation into the Philippines for the month of January may be judged by the numeration of the following list of the most important items: iron, and manufactures of iron, P4,835,095; cotton cloths, P1,581,080; manufactures of cotton, P747,036; automobiles and parts of, P1,184,473; rice, P53,866. The total duty collected on imports was P842,572.—F. J. DOLAN.

The Treaty is Dead

The Fight for the Constitution

By George Bronson Rea

THE treaty is dead. The Chinese may derive a certain satisfaction from the delusion that the Shantung award was one of the contributory causes to its defeat in the United States Senate and take unto themselves and their friends an undue proportion of the credit for their part in bringing this about. They should labor under no such delusions. The real fight in the American Senate has nothing to do with the treaty. It is a struggle of constitutionalism against autocracy, of the rights of majority rule against the self-willed leadership of a one-man dictatorship. It is, on another scale, the great problem that China has to solve in her own way for her own salvation; whether the duly elected representatives of the people in parliament assembled shall be permitted to govern the nation, or whether this constitutional body shall be ignored by every tuppenny military satrap seated in the Presidential chair by the power of the army and held there in defiance of the popular will by the points of its bayonets.

The lesson of the Peace Treaty at Washington is one that all other self-governing democracies should take to heart and heed. Instead of criticism and ill-natured abuse, foreign self-interest should be laid aside long enough to try and analyze what it all means. The Americans are not quitters, nor are they shirking their obligation to the Allies or mankind. They are, however, determined first of all to preserve intact those principles of self-government upon which rests the future hope of the world, principles that have been ignored, surrendered and flouted by a strictly party government under a one-man dictatorship. If this principle is now surrendered, if the constitution no longer binds the Chief Executive to its provisions, then the end of our great experiment in government is not far off. If the Constitution can be set aside to further the ambitions of one President, the precedent is created for his successors to do likewise, and the time will sooner or later arrive when the nation will be face to face with another civil war, and degenerate to the level of the Latin American and Chinese republics.

The issue in the United States simmers down to this. After four years of shirking responsibilities, preaching idealism and pacificism, of being too proud to fight, and penalizing the red-blooded, virile, representatives of American manhood whose voices were raised throughout the land for preparedness and defense of our rights, President Wilson was finally compelled to go before Congress and ask for a declaration of war against Germany. The nation to a man, stood shoulder to shoulder behind him. There was no wavering. Party lines were-forgotten. The old-time fighting American instinct flamed anew in answer to the challenge thrown down by the continued bad faith and insults of Germany. Did the President appreciate and reciprocate the wonderful wholehearted patriotic support tendered in this black hour of world stress?

No! He declared in effect: "this is a war for Democracy, to make the world safe for Democracy. It is a party war, a Democratic war and only Democrats are fit to be placed in responsible positions." He refused to permit Republican statesmen to share in the responsibilities of government and its administration, either as Cabinet officers, organizers or military leaders. He rebuked, penalized, ignored and nearly broke the heart of the greatest American since Lincoln, who humbly and respectfully requested his right as a citizen to fight for his country in its hour of danger, not as a commander of armies, but as a simple brigadier under the orders of the Commander-in-Chief. He demoted and slighted the leading General of the American army, the greatest executive and organizer the country has developed and tried to force his retirement by ordering him before a medical board for examination for physical disabilities, simply because this whole-hearted, far-sighted American, had been outspoken in his demand for national preparedness at a time when President Wilson was preaching pacifism and disarmament. The Republicans of the United States will never forgive these slights and injustice to Roosevelt and Wood, nor the lack of consideration for those other tried and experienced diplomats and statesmen who have piloted the nation to greatness and prosperity through the long years since the civil war.

When all other great nations had wiped out domestic party lines and called into supreme power coalition and national cabinets, President Wilson clung tenaciously to strict party lines, and surrounded himself with and brought into office untried idealists, dreamers, literatii and a hodge-podge collection of political followers, to do the work that only trained men can accomplish. And, when in November 1918, election time drew nigh, he went before the country and asked, nay demanded, that the people return a Democratic majority to Congress; on no account must Republican be elected. The Republicans, for years the dominant party in America, were not worthy to assist in directing this great struggle for Democracy, they were good enough to fill the ranks, and do the real work in subordinate positions, but the glory and prestige of the great sacrifice must belong to Triumphant Democracy, to Democrats, and, by a process of elimination, to one single Democrat, Woodrow Wilson.

The great American public listened respectfully and then, in no unmistakable tones,- asserted its independence. The answer deposited in the ballot boxes was clear. A Republican majority was elected to both Houses of Congress. Did the President accept the verdict of the nation? No!

The President was courteously informed by the dominant party leaders that the League of Nations must be separated from the Treaty. The Republican leaders in the Senate exercised their constitutional rights in advising him on this matter, and warned him that any such treaty would be rejected. He was urged to remain in Washington and direct the affairs of the nation and send duly appointed commissioners to Paris to negotiate the treaty. To all this safe, sane, old-fashioned American advice, the President turned a deaf ear. Instead of following the time-honored precept of keeping his ear to the ground to catch the first rumblings of coming discontent; his eyes were focussed on beautiful visions that danced before his gaze on the horizon; his head reared above the clouds and his ears listened rapturously to mysterious voices in the air. He scorned the advice of the coordinate treaty-making power, and, on the eve of his departure for Paris, threw down the gauntlet of battle by publicly declaring that he would come back with the Treaty so interwoven into the League that they could not be separated without destroying them both.

And he kept his word.

The Treaty was signed. The President returned with it to the United States. Was the document submitted at once to the other branch of the treaty-making power. No! It was being sold on the streets of German cities for twenty-five cents a copy, its contents were known throughout France, England, Italy, and other countries, copies were in the hands of certain Wall Street financiers, but the coordinate treaty-making branch of the American Government was maintained in complete ignorance, until an enterprising Chicago newspaper whose correspondent obtained a copy in Paris and rushed it over the Atlantic published it in full. It was the first information the United State Senate received of its contents, and was duly read into the official record. The President at last sent the official copy of the treaty to the Senate with the demand "that this must be signed at once, and, as it is written," without the crossing of a t, or the dotting of an i.

A Supreme Council of Four sitting in secret in Paris drafted and signed an epoch-making document, and then said to the advisory half of the constitutional treaty-making power of the United States, "sign here on the dotted line." Could the Czar, Kaiser, Huangti or Shogun in the heyday of their autocratic powers, have acted in a more arbitrary and contemptuous manner, in defiance of the people's right, than did President Wilson in this matter?

Is it any wonder that the worm at last turned? The "Poor Fish" of the Republican Senate refused to bite. Four years of patient waiting, eating out their hearts with a patriotic and commendable desire to give their best to their country, discriminated against, abused, maligned, slandered, insulted and ignored, the Republican majority turned on the dictator. The experience had left an indelible mark upon the Republican leaders and aroused the intense hostility of the party at large. Can the world wonder at the result? Can it censure the group of "bitter-enders" who have sworn to kill the treaty, and so place on record their patriotic adhesion to the constitution, flouted and overridden in this insane desire to ram down the throats of the Senators, the personal will of the President?

The Republican party is sore. There is no use trying to disguise this fact. For the first time under the constitution, its leaders have shown a determination to use its power. The treaty is dead. The Knox proposal to declare peace with Germany has passed the Senate Committee on Foreign Affairs. It may pass the Senate and be rejected by the President. It or some compromise may be passed over his veto by a two-thirds vote. And then, what? Already are heard rumblings of impeachment proceedings. The President is accused of "failing to faithfully perform his duties, that he has not in good faith endeavored to preserve, protect, and defend the Constitution of the United States. That acting to the contrary, he has endeavored to thwart, contravene, frustrate, and defeat the Constitution, and its purpose." He is accused of contriving with others to bring about and affixing his signature to, so much of the Treaty of Versailles as embraces the Covenant of the League of Nations, has deliberately attempted to subject the Congress of the United States to a jurisdiction foreign to our constitution and unacknowledged by our laws. By word and act he has shown contempt for the Senate of the United States; he has sought by inciting the uninformed to clamor against the lawful use of the authority thereof, and by threats, to diminish the prestige and authority of a coequal organ of the government. This he had done in the attempt to deprive the Senate of the untrammelled use of the powers by which it is enabled to discharge essential duties imposed upon it by the constitution, in order that he may unlawfully possess himself of these powers, to the end that he should himself become the uncontrolled master of our foreign relations. Moreover, he has heaped contumely upon members of the Senate engaged in the discharge of their duties, and has sought thereby to bring members of that body who respect the sovereignty of their respective States, into disrepute, to the jeopardy of that sovereignty and of the respect for government and law and the rights of the States upon which the security of the nation depends. Still, these rumblings presage the coming storm. This may be accepted as the sentiment of many Republicans, but it will hardly receive serious attention.

The Japanese Privy Council voted for the impeachment of their delegation, because it surrendered vital points of sovereignty and equality. Only the absence of any legislative machinery in Japan for this purpose has freed the Delegation from answering to the people for their mistakes. The machinery for impeachment exists in the United States. A President can go so far and no further. The fight for the preservation of the American Constitution is not finished. Out of consideration for his undoubted high motives, the President may escape legislative censure. Then the issue will be carried to the polls. The Constitution! will be the campaign slogan of the Republican party this coming year.

The American people recognize their duty to those they have fought with, but their first duty is to themselves. If the Treaty is passed as it is written, and the President emerges victorious from the conflict, the days of the great American Republic are numbered. From free citizens of a glorious democracy, Americans will be converted into the subjects of autocrats wearing concealed underneath the sleek, glossy, exterior of a high-silk hat the ponderous crown of a Muscovite Czar.

Chinese Railway Technics Commission

The first session of the Preliminary Engineering Conference of the Commission on Railway Technics was begun on February 14 in the Ministry of Communications, Peking. It was personally attended by Minister Tseng to emphasize its importance.

The opening address was given by the Chairman of the Commission on Railway Technics, M. H. Shen. In the course of it he briefly reviewed the importance of the unification of railway technics and engineering, and the history leading to the organization of the Commission. He paid a tribute to the late Dr. Jiem Tien-yu, former Chairman of the Commission, who had rendered no small assistance as its inception.

The Minister of Communications also spoke pledging his support to make the Commission a success. The other speaker of the occasion was Mr. Whang, Chief of the Traffic Department and Director-general of the Chinese Government Railways.

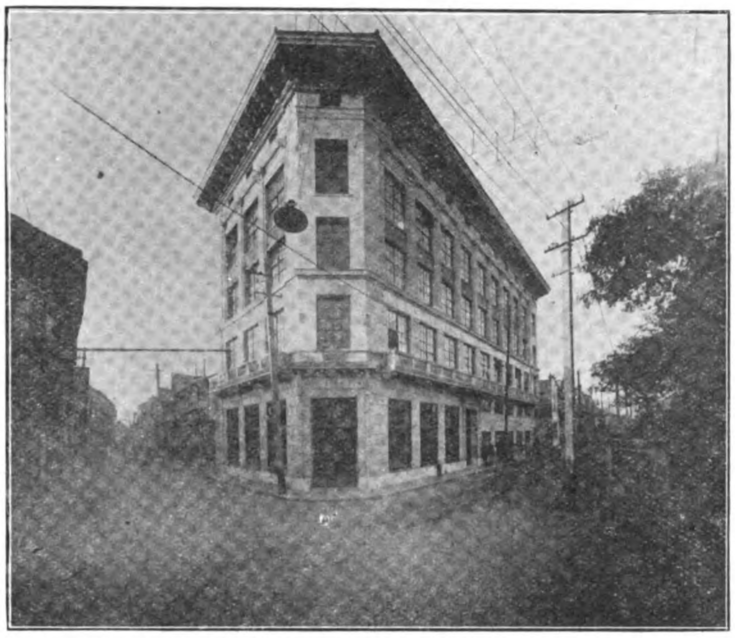
The four foreign advisers who were specially engaged in connection with the Commission on Railway Technics were present. They were T. R. Johnson, British Adviser; F. H. Clark, American Adviser; S. Hirai, Japanese Adviser; and P. Painleve, French Adviser. Among those who attended the meeting were:

J. F. Yu, Vice-chairman.
T. C. Li, Vice-chairman.
Thomas Sze, General Secretary.
T. T. Hoa, Member-in-Charge, Committee on Engineering.
E. F. Wei, Member-in-Charge, Committee on Mechanics.
C. S. Liu, Member-in-Charge, Committee on Traffic.
C. Chang, Member-in-Charge, Committee on General Affairs.
T. R. Johnson, Adviser.
F. H. Clark, Adviser.
S. Hirai, Adviser.
P. Painleve, Adviser.
A. Taton, Delegue de M. Painleve.
L. Dethieu, Chief Engineer, Maintenance Department, Peking-Hankow Line, Member of the Commission.
T. King, Resident-Member.
E. K. Denn, ,,
J. S. Suen, ,,
H. Ouang, ,,
H. W. Ho, ,,
T. T. P'ou, ,,
Y. C. Yew, ,,
P. S. Tang, Resident-Member and French Secretary.
V. T. Paw, Resident-Member.
W. F. Wang, ,,
H. H. Ling, ,,
E. H. Sze, Japanese Secretary.
B. Bellion, English and French Secretary.
B. J. Boothby, Engineer-in-Chief, Canton-Kowloon Line.
E. Bonnevey, Engineer-in-Chief, Lunghai-Pienlo Line.
G. Bouillard, Adviser, Peking-Hankow Line.
C. J. Carroll, Acting Engineer-in-Chief, Hankow-Ichang Section, Hankow-Szechuan Line.
C. L. Chai, Chief of Engineering Department, Peking-Hankow-Suiyuan Line.
A. G. Cox, Engineer-in-Chief, Hupeh-Hunan Section, Canton-Hankow Line.
E. C. A. Dunn, Engineer, Way and Works, Taokow-Chinghua Line.
D. P. Griffith, Acting Engineer-in-Chief, Shanghai-Nanking and Shanghai-Hangchow-Ningpo Line.
A. R. J. Hearne, District Engineer-in-Chief, Tientsin-Pukow Line.
T. Hu, Chief of Engineering Department, Chuchow-Chinchow Line.
de Laperiero, Acting Engineer-in-Chief, Cheng-Tai Line.
C. S. Wang, Assistant Chief of Engineering Department, Peking Department, Peking-Hankow-Suiyuan Line.
J. E. R. Peebles, Resident Engineer, Chuchow-Pinghsiang Line.
Shisato, Engineer-in-Chief, Seu-Tsen Line.
D. P. Ricketts, Engineer-in-Chief, Peking-Mukden Line.
Shemidsu, Resident Engineer, Kirin-Changchun Line.
J. S. Wang, Managing Director, Chanchow-Amoy Line.
M. Sullivan, Acting Engineer-in-Chief, Chuchow-Chinchow Line
J. N. Yu, District Engineer-in-Chief, Tientsin-Pukow Line.

The preliminary engineering conference lasted several days. The subjects for discussion during its sessions were (1) Standard Construction Gauge, (2) Cross-sections of railways, (3) Permanent ways, (4) Switches and crossings or frogs, and (5) Steel bridge constructions. These are main subjects which are subdivided.

Progress in Chinese Journalism

THAT journalism in China has taken remarkable strides forward in recent years goes without saying, notwithstanding that it was in the days of the Ming dynasty when the first newspaper—the "Kung Men Chao" or "The Imperial Court Gazette," of Peking—was published in the Middle Kingdom. But it is interesting to note the various phases of such progress.



The "Shun Pao" New Concrete Building, Shanghai

We will not attempt to estimate the number of newspapers in actual existence throughout the Republic, since it is never easy to get at precise figures, but it is surprising that more and more foreign newspapers are also entering this interesting field to enlighten Chinese public opinion. For example, many so-called native papers are really Japanese owned, yet their "we Chinese" and "our country" are meant to lead the unwary astray. In addition the same nationals are also starting professedly Japanese organs in the English language in Peking, Tientsin, etc., so that Dai Nippon's aims and policies *vis-à-vis* the Chinese may not be misunderstood by Americans and Europeans. Finally there is also the interesting fact that not a few foreign dailies have begun to publish Chinese editions, notably the "Peking and Tientsin Times" and "Le Journal de Pekin."

Until democracy as it is definitely understood in the West, is fairly enthroned in this country, it seems that the phenomenon of what the Chinese call "political-parties-subsidised" papers will always exist, especialy as the art of advertising is still an almost unknown aid to Chinese merchants. Even then within such circumscribed limits, the enterprising among the Chinese journalists are endeavoring to live up to the ideals and traditions of their noble profession. Consequently, apart from taking sides where they are expected or constrained to do so, these editors have a considerable field to explore in the way of enlightening public opinion. And this is especially true of their non-political news pages—the literary sheets—with the result that not only serial stories are regularly appearing but translations from foreign fiction—e.g. Carpenter's "Love's Coming of Age"—are also becoming increasingly popular.

A decade ago a favourite "stunt" with the native newspapers in Shanghai—that holiest of holies of extraterritoriality—was to heap coals of satire and ridicule upon the heads of Chinese officialdom. For example, the following appeared in translation in one of the most influential dailies which to-day is "still going strong," under its Notes and Comments :—

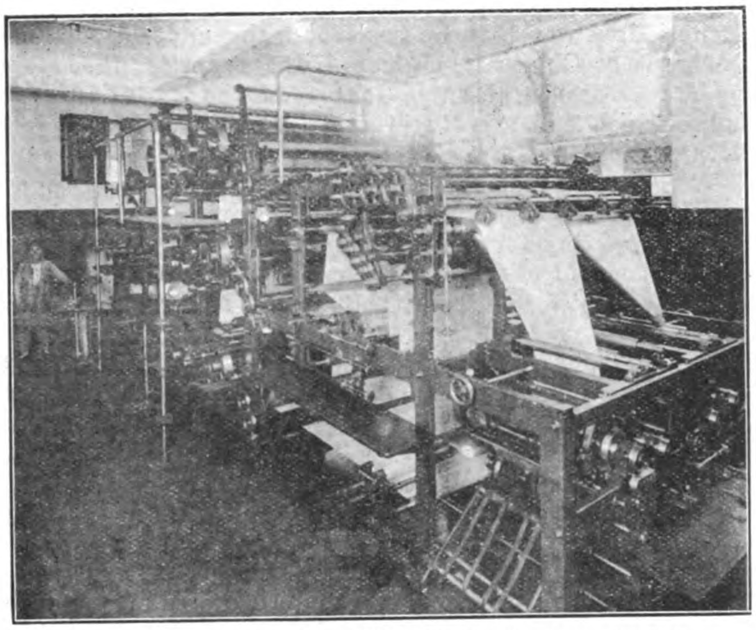
"The eight thoughts of a Chinese official are—(1) When he hears of the construction of a railway, he thinks of its being vested in Government control; (2) when he hears of the development of a new industry, he thinks of the appointment of officials to foster it; (3) when he sees commercial commodities, he thinks of the *likin* tariff; (4) when he meets a Western Returned Student, he regards him as a revolutionary; (5) when he meets a Chinese merchant from Singapore, etc., he thinks of charitable endowments; (6) when he meets a superior, he thinks of cultivating his good graces; (7) when he meets an inferior, he expects to be treated with due respect, and (8) when he hears of a local uprising he calculates upon his chances or otherwise of earning a Red Button."

Such language sounds rather archiac after the lapse of ten weary years, for not only about 6,836 miles of railways have been constructed and numerous industries developed, but the Manchus have gone, never to return, and the people are living under a Republican regime, even though it is still in name. Besides, Red Buttons and Peacock Feathers are no longer *a la mode;* these have perforce been replaced by the Order of Merit, the Order of the Excellent Crop, and the Order of the Striped Tiger, etc. Nevertheless, patriotic Chinese will yet for many a long day have to do incessant spade work to cleanse the Augean stable of official corruption in this country. And until the hearts of Chinese officials are purged of all forms of uncleanliness, it may be doubted if Democracy can be really enthroned on the pedestal of China's body politic.

Business Department of "Shun Pao"

However, it is encouraging to find that even to-day "the pen is mightier than the sword," and the Chinese editor knows how to wield his pen and make the wrong-doer look stupid. But the predominant note which is being struck in the majority of Chinese journals is one of reconstruction.

Eight years of mock Republicanism and two years of insensate civil strife between the so-called North and South have nauseated men's minds, and the clarion call proclaimed to-day through the press is "Reconstruct!" The unabashed hypocrisy of those who perform lip service to the ideals of constitutionalism is worn almost threadbare and none but the absolutely blind will wish to see them continue, much less multiply. Politics, finance, education, etc.—all these are so much rottenness, and their tottering structures will soon collapse like a pack of cards. There is no time to be lost if the calamity is to be averted, and hence the imperative need of immediate reconstruction from top to bottom.



Printing Department of the "Shun Pao" (The Sextuple Rotary Press, R. Hoe, Maker.)

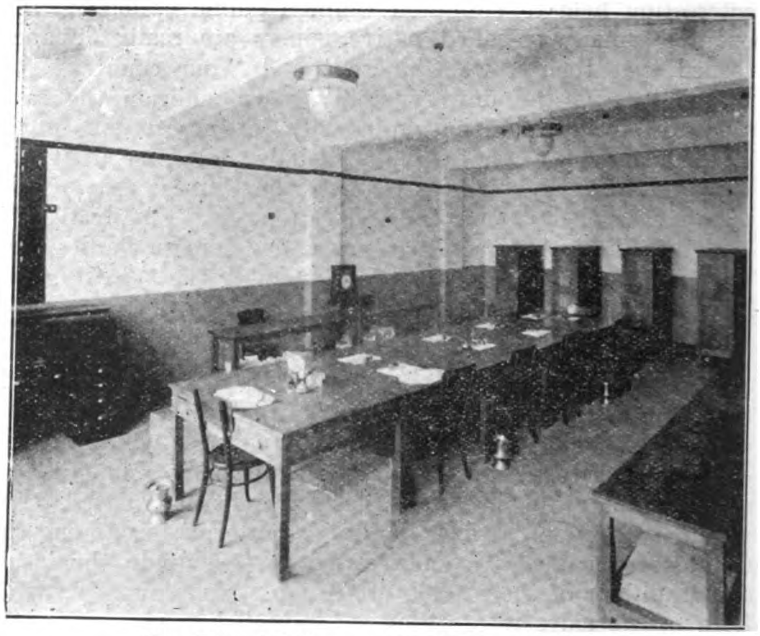
Yes, but how to reconstruct? The change from absolute monarchy to a Republic does not seem to have helped the Chinese people much, except perhaps in their being minus the Manchu-imposed hirsute appendage, and the word politics is being almost tabooed from patriotic, respectable Chinese society. In fact, the professional politician is a parasite of the first water and the wider the berth he is given the better for all concerned. On the one hand he lends no help to the production of wealth, and on the other he is daily eating into the vitals of the nation, if not actually selling the people's birthright for a few miserable shining shekels. If so, all the energies of the nation should be concentrated on the problem of increasing the national wealth, not however by ill-gotten means but by honest labor.

The most effective method for this purpose is to bestir the wealth-producing elements and assist them in all possible directions. Those who can read the ordinary newspapers do not need much persuasion in this matter, and already they have done more than their level share to make themselves as well as their country prosperous. But the vast majority who are unable to wade through the journals written in classical Chinese style deserve all possible encouragement, since their quota of contribution to the sum total of the nation's wealth is by no means negligible. Therefore they should be given the means of enlightenment most easily accessible to them. And such facilities are gradually being provided through the medium of the vernacular press in simplified colloquial (*pai hua*), as the newly started "Ming Pao."

According to its advocates, notably Prof. Dr. Suh Hu, of the Peking Government University, the *pai hua* (plain language or vulgate Chinese) should be the new language for this country, because it is the spoken language and most truly represents the life and needs of the people. The old classical "literary language" is dead, and no longer a sufficient medium for creative literary productions: "Only a living language is fit for the production of a living literature." What is most important, the old *wen-li* style is accessible only to the educated classes, whereas the new movement aims to open the literary riches of the world, etc., to the greatest number of people. Therefore, "if we truly wish to give China a literature which shall not only be expressive of the real life and thoughts of our own time, but also be an effective force in intellectual and social reforms, we must first emancipate ourselves from the fetters of a dead language which may have once been the fitting literary instrument for our foreigners, but which is certainly not adequate for the creation of a living literature of our own times."

Hence more and more papers are being published in the *pai hua* style. "There are several scientific and philosophical works now published in the spoken language. Editors of several newspapers, such as the 'Kuo Min Kun Pao' of Peking, and the 'Shih Shih Hsin Pao,' of Shanghai, are now writing their editorials in it. Other periodicals, notably the 'Weekly Review' of Peking, and the 'Renaissance,' a new monthly edited by the students of the Peking Government University, are publishing vulgate articles and verses in their columns. Last but not least, Mr. Liang Chi-chao, whose writings have greatly influenced the Chinese for almost twenty years, is now writing his Sunday lay-sermons in the spoken language."

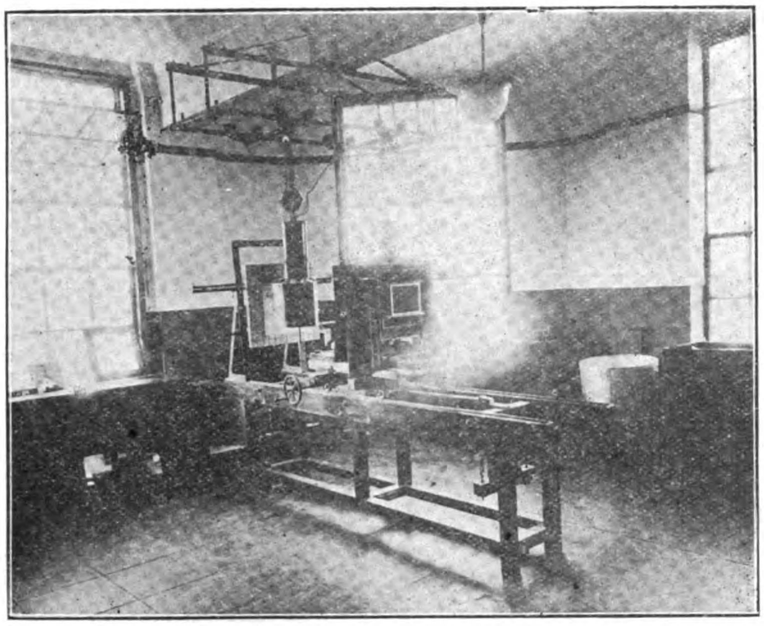
Notwithstanding the opposition of the classical or literary school, it seems that the *pai-hua* has come to stay. Hence many native newspapers have also their extra *pai-hua* sheets, either distinct from the main issues or complementary to them, exclusively for the less educated classes. And the newest auxiliary venture in the field is the "Ming Pao" (or "The Voice") of Peking which began publication on November 1, 1919. It has just one big sheet, but it promises to grow larger. Its most noteworthy feature seems



The Editorial Department of the "Shun Pao"

to be refreshing independence and emphasis on the wealth-producing possibilities of the Republic. In addition to the usual quota of news such as late government decrees, local news, domestic news, topical notes and comments, etc., its first issue contained an article on the development of the

Chinese trade in pig's bristles and also shorter ones on the dangers of drinking and smoking, as well as certain objectionable practices found at Chinese theatres.



Halftone and Zinc Plate Department of the "Shun Pao"

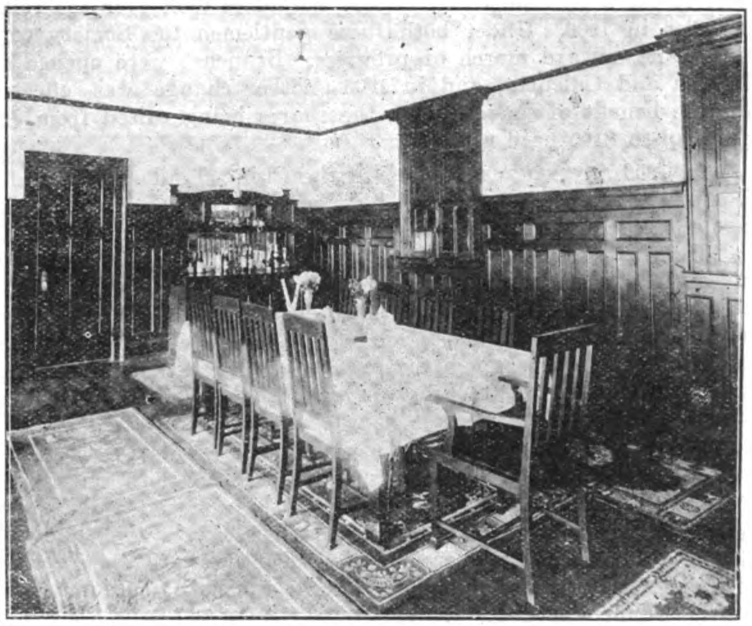
We will not attempt here to enumerate the formidable list of publications which to-day are influencing Chinese thought and mentality: they are admirably set forth in Mr. H. C. Meng's informative article on "What the Chinese read to-day," in "China in 1918," edited by M. T. Z. Tyau, LL.D. But even a cursory glance at current Chinese periodicals reveals the fact that there is a distinct tendency in favor of socialism and feminism in the majority of such writings. For example, a recent issue of "La Jeunesse"—that redoubtable champion of *pai-hua*—was devoted almost entirely to a study of the doctrines of Karl Marx and his disciples, and "Das Kapital" has already appeared in a metropolitan daily. Besides in "Emancipation and Reconstruction," one of the newest periodicals, the doctrines of Robert Owen, Louis Blanc, Saint Simon, Fourier and other utopian theorists have admittedly acquired an incomparable importance.

"The hand that rocks the cradle rules the world." So the woman in China is steadily coming into her own, and perhaps faster than one would have thought. A recent number of "Emancipation and Reconstruction" thus includes the following among its bill of fare:—woman suffrage, co-education, the fight for woman's economic independence, the abolition of prostitution and concubinage, etc. Feminists in China may or may not be sanguine over their rosy expectations, but there is no denying the fact that the movement in favor of woman's emancipation has more than begun. "The Chinese Ladies' Home Journal" has been in existence for almost half a decade and the feet of that redoubtable idol of clay—the old-fashioned matrimony, with its match-makers and other senseless customs—are fast crumbling to dust. If every Chinese lady were to adopt the advice advocated in its columns in choosing a life-partner, it would seem that many otherwise eligible young men would be deterred from embarking upon the venture. In fact, the advice was no other than that which would be followed by a man in his choice of a life-partner.

Thanks to the present lawlessness and anarchy, the militarists are having it all their own sweet way. The weight of their mailed fist is evident everywhere, and more than one liberal newspaper has been compelled to cease publication. The general atmosphere has become decidedly stifling, and Chinese editors are only too glad to take refuge in innocuous doctrines of socialism. The powers that be may label these new theories by the convenient name of Bolshevism, but that would be only a pretext to close down more enlightened organs of public opinion. The fact is there is a new spirit abroad in the land which it is not easy to quench by either force or peaceful persuasion. It was this spirit which was responsible for the recent Student Movement, and it is this same spirit which is striving for the greatest good to the greatest number. However deficient the Chinese press is in other respects, it is distinctly to its credit that it is by no means lagging behind when the Republic is stirring from east to west and north to south.

The "Shun Pao," established in 1872, or during the reign of Tung-Chi of the Ching Dynasty, is the oldest newspaper in China. Its head office is a modern five-storied concrete building, built by the American Trading Company, at 24 Hankow Road, Shanghai. There are more than a hundred rooms in the building, certain of which are divided into three departments, Business, Editorial and Printing. There is also a library, photo-engraving rooms, artists' quarters, and a staff club.

The printing machinery is of the latest American type. Forty-eight pages can be printed at a time and 48,000 copies of 12 pages can be printed, folded, delivered and counted in an hour. The equipment can produce copper and zinc plates, electors, sterios, mats, etc. The physical appearance of the newspaper is attractive. The type is clean and clear. The advertising designs are well executed. The commercial reports are exhaustive containing a complete list of the latest market quotations on all sorts of commodities. Much discrimination is used in the selection of the cartoons and scenery pictures. Only those are used which have educational and instructive value. There is a "Free Talk" department devoted to wit and humor, entertaining literary articles, and domestic science. The policy of the paper is to uphold and lay special stress on industry and education, believing that by encouraging public opinion and independent thinking they are marching towards democracy.



Dining Room of the "Shun Pao"

The library contains a complete set of old "Shun Pao" publications covering a period of 47 years. Owing to the old establishment of the paper it has a wide circulation which extends to every city in the interior of China, the South Sea Islands, Annam, Korea, Europe and America.

Union Insurance Society of Canton, Ld.

The Union Insurance Society of Canton, Limited, was established in 1835—85 years ago—by a group of far-seeing pioneer British merchants under the guidance of the old firm of Dent & Co. Almost immediately it achieved a degree of success, which was remarkable even in those fortune-making days. The initial capital was $1,250,000, divided into 250 shares of $5,000 each, with $1,000 per share paid up. Every third year in those improvident days, the profits were divided, and scanning old reports we read of a first, second and even a third dividend of $500 per share.

In 1841 when Hongkong was ceded to the British Crown, the confidence of these early day merchants was evinced by the transference of the "Union" to the security of the new Colony and the British flag. Its development has been synonymous with the growth of the colony ever since.

In the general financial upheaval of 1864, Dent & Co. came to grief, but the "Union" unshaken became a separate entity. A British Committee of Management was appointed, consisting of the representatives of the great British firms then established in the Colony, and Mr. C. D. Williams was appointed Secretary. He retired shortly afterwards in favor of Mr. Robert Watmore, who was succeeded in 1871 by Mr. Nathaniel J. Ede (uncle of the present General Manager, Mr. C. Montague Ede) who had been in charge of Dent & Co.'s insurance business.

Under Mr. Ede's management the risky policy of a triennial distribution of profits was changed, and an accumulation of a reserve to provide for possible contingencies and future expansion was substituted. The wisdom of this policy is reflected by the sound position which the "Union" occupies to-day.

During Mr. N. J. Ede's time, the shares were several times divided up for the convenience of shareholders. In 1874 the original capital of 250 shares of $1,000 each was split up into 500 shares of $500 each. Again in 1882 the capital was sub-divided into 2,000 shares of $125 each and three years later, in 1885, into 10,000 of $25 each. In 1895 the paid-up capital was increased out of surplus funds from $250,000 to $500,000 by doubling the value of each share to $50. Branches were established in London, Shanghai, Singapore, Yokohama and Melbourne, and in 1899 Mr. Ede retired.

He was followed by Mr. Douglas Jones who controlled the Society for a year until Mr. W. J. Saunders took over the reins of office in 1900. Under both these gentlemen the Society continued its onward march of progress. Branches were opened in Manila and Calcutta, and in 1903 another change was effected for the benefit of shareholders, the shares being raised from $50 paid up to $100 paid up.

In 1906 an amalgamation with the China Traders' Insurance Company, Ltd.) (now the British Traders' Insurance Co., Ltd.) was effected, and in 1907 Mr. W. J. Saunders retired.

He was succeeded by Mr. C. Montague Ede, who had then already been 24 years in the service of the Society, principally at Shanghai and Yokohama. What the Society and its shareholders now owe to him cannot be adequately described. If, as it surely can be contended, the progress of the Society up to 1907 had been wonderful, its progress since have indeed been phenomenal.

Further Branches have been established at Tokio, Hankow, Tientsin, Sydney, Adelaide, Auckland, Wellington, Sourabaya, Toronto, Vancouver, Brisbane, Perth, Christchurch and Buenos Aires. The Society has also entered the field in the following States of America:—New York, Kentucky, Massachusetts, Illinois, California, Louisiana, Ohio, Minnesota, Indiana, Missouri, Connecticut, Iowa, Vermont, Wyoming and Virginia. Numerous Agencies have also been established throughout the world.

In 1915 an offer of amalgamation was made to and accepted by the China Fire Insurance Co., Ltd., with a gratifying result to all concerned. In the same year, the Society's authorised capital was increased to $4,000,000 by the creation of 3,600 additional shares, and in 1919 an important change was effected in the conversion into sterling and increase of the authorized capital to £2,000,000, divided into 200,000 shares of a nominal value of £10 each, upon which £4 per share is credited as paid up.

During 1919 a fusion of interests between the Society and the North China Insurance Company, Ltd., was arranged and is now in course of completion, the "North China" maintaining its Head Office at Shanghai as heretofore.

The following figures show the steady and remarkable progress made during approximately the last 50 years:—

	Income £	Funds £
1868	121,088	142,359
1878	183,622	235,498
1888	197,247	277,493
1898	250,223	479,683
1903	416,982	725,708
1913	699,201	1,267,405
1914	1,035,180	1,856,492
1915	1,444,075	2,720,192
1916	1,834,011	3,933,602
1917	2,613,352	5,010,772

The figures of the British Traders' Insurance Company are incorporated in the above from 1913 and those of the China Fire Insurance Co., Ld. from 1916.

The aim of the Society is service and satisfaction. It is well and firmly established in the world-wide field, perpetually adjusting itself to new conditions which have to be met. That it is continually on the lookout for future development is evidenced by the recent establishment of a department for Aviation Insurance.

Mr. Crane to be American Minister at Peking

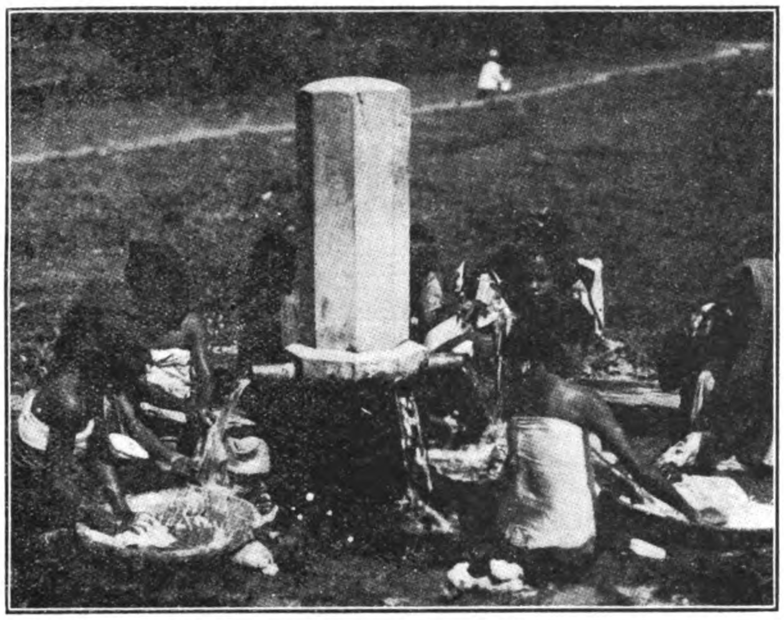
Mr. Charles R. Crane, who is already well-known in China, and who is a leading American business man and financier, is to succeed Dr. Paul S. Reinsch as American Minister at Peking. Mr. Crane recently visited China on an investigation of conditions and was largely entertained by the Chinese, who learned to appreciate his high ideals and qualities. His return will be welcomed by both officials and commercial men. This is the second time that Mr. Crane has been appointed to China, the first occasion being in 1909, but he did not then take up the position. Early in the Wilson Administration he was also offered the position of American Ambassador to Russia but he declined the post. Mr. Crane was born on August 7, 1858, in Chicago, and ultimately became President of the Crane Company, manufacturers of valves, etc., from which post he retired some years ago and enlarged his interest in public affairs. He became greatly interested in the Russian question and was a member of the special Diplomatic Commission sent to Russia by President Wilson in 1917. As vice-chairman of the Wilson finance committee in the Presidential campaign of 1912 Mr. Crane rendered yeoman service and was largely instrumental in securing the election of President Wilson. Mr. Crane is a director of the National Bank of the Republic, Chicago, and a trustee of the Municipal Voters' League, Chicago, and in other ways has been identified with the development of Chicago. His coming to China will be warmly welcomed by the Chinese, with whom his last visit brought him closely in contact, as well as by American business men and foreigners generally.

As a recognition of the invaluable services he has rendered his country, General Emilio Aguinaldo, first and only president of the short-lived Philippine Republic, will receive a life pension of P.12,000 a year from the Philippine Government. A bill to this effect was recently passed by both houses of the Philippine legislature in special session. General Aguinaldo is now in the Philippine General Hospital suffering from the aftermath of an operation for appendicitis and a general breakdown.

Making the Earth Yield Pure Water for the Filipinos

By F. J. Dolan

THE drilling of artesian wells, the construction of water systems and the purification of water, are perhaps the gravest problems which the Philippine Government has to solve; nevertheless, in no single line of endeavor has better progress been made, especially during the last eight or ten years, than in the improvement and development of water supplies.



A Typical Town Pump in the Philippines

Previous to the American Occupation little attention had been paid to the question of obtaining suitable water or of improving public water supplies. With comparatively few exceptions the 8,000,000 inhabitants of the Archipelago were entirely dependent upon surface supplies, such as rivers, shallow wells, and in many cases rainwater, often dangerously polluted.

The single municipal water supply system worthy of the name, that of Manila, was not installed until 1882, and as this water had passed through a well populated area, it was subject to frequent and dangerous contamination. There was no modern sewerage system in the Islands, not even in Manila, and the first knowledge of the value of artesian wells penetrated the Archipelago with the American forces.

In speaking of prevailing conditions in Pre-American times, the Director of the Philippine Bureau of Health has said: "The towns throughout the Islands were compelled to get their water from small rivers, springs, irrigation canals, rainwater, and any other source where water of any sort was available. Springs were never protected, wells were never covered; the rainwater collected from nipa roofs was unclean and soon became filled with mosquito larvae and other insect life."

The use of these primitive and dangerous sources of water supply has been practically abolished now, however, as most of the villages not yet equipped with artesian wells draw most of their supply from wells in neighboring towns.

A few years ago the Philippine Insular Government offered to drill wells, and, whenever practicable, to install water supply systems in connection with the wells, in any town or municipality willing to shoulder one-third of the final cost of the project, the Government to contribute the remaining two-thirds. That the towns and municipalities have responded readily to the offer is evidenced by the fact that, at the present time, over 1,800 artesian wells have been drilled. These wells range in depth from 100 to 1,500-ft.; in a few remote cases, however, over 2,000-ft. has been drilled before striking water.

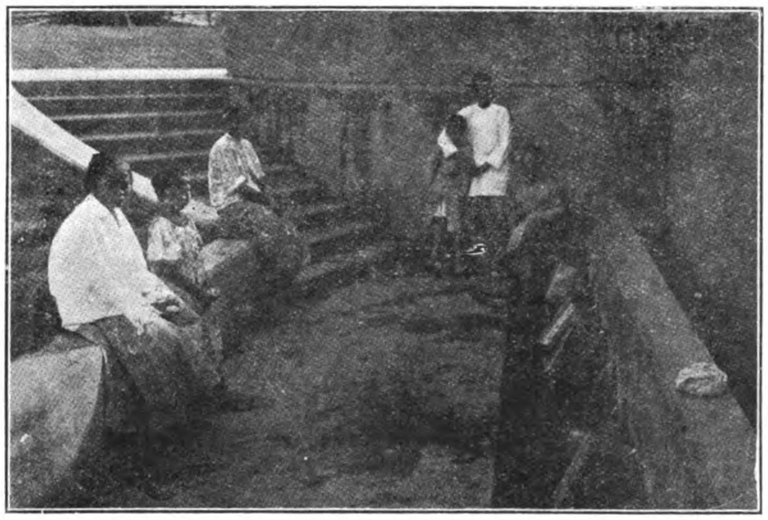
The volume of the artesian wells varies with the locality. It has been found that wells drilled close to the foot of mountains are of a much greater volume than those sunk in the lowland districts. This is due to the fact that best results in artesian well drilling in the Islands are attained when operating in thick sand and volcanic rock. Four hundred and fifty gallons a minute is the volume record for any single well, which was attained at a depth of 185-ft.

Deep-well waters in the Philippines have been found as a rule to be more highly mineralized than spring waters and at times the degree of mineralization is sufficient to render the water unserviceable for drinking purposes. The principal impurities noted in this connection are abnormally large amounts of common salt and iron. All artesian wells bored by the Bureau of Public Works pass the purity tests of the Bureau of Science before being opened to the public.

Water from shallow wells usually has only a small mineral content and is unobjectionable from a chemical point of view, but it is only with great difficulty that such wells can be kept pure and uncontaminated.

The typical surface well in the Philippines is situated in a crowded barrio, or small village, very near to cattle stables or human habitations. It is generally open and uncovered and is frequently without casing or curbing; washing clothes and bathing are commonly carried on at the well side, although no drainage for the dirty water is provided, and animals are usually allowed to run loose in the vicinity. Before the artesian well campaign of the government, no one vessel was used for drawing water, each comer bringing his own and lowering it into the well. The water in practically every surface well examined by the Bureau of Science has been shown to be dangerously polluted and absolutely unfit for human consumption; however, most of these fever breeders have been filled in by the Government.

The effect on the public health of the pure water made available has been remarkable. Some towns, where artesian water is exclusively used, have shown a 50 per cent. reduction in mortality. The first artesian waters were looked upon with suspicion by the natives, and even now, in some sections, an artesian well furnishing potable water will be abandoned in favor of an open surface well that is almost certainly polluted, but with which the inhabitants are familiar.



Large Public Artesian Well with Trough Equipment, Cebu

The movement in favor of artesian wells has reached out into the most isolated barrios and municipalities, and the bureau of public works, in accordance with the demand for better sources of water supply, has set aside P.3,000,000 to be used in the year 1920 for the construction of artesian wells.

Conditions are still far from satisfactory in many parts of the Archipelago. In too many cases dependance for drinking water is put on the nearest available source, quality often being a consideration of secondary importance.

However, great progress has been made, and it is to be hoped that this progress will continue, and that with the advance of education and improvement in the standards of living, a corresponding improvement in the systems of water supply will be evidenced.

Foreign Commerce Corporation of America

Messrs. J. P. Morgan & Co. on December 31 announced the organization of a new company to engage in international trade. In forming this company Messrs. Morgan & Co. re-enter the commercial field, in which the original house of Junius Morgan & Co. was engaged in London.

The fact that Messrs. J. P Morgan & Co. have organized a second firm to promote foreign trade is regarded as indicating that firm's purpose to play a very important rôle in the post-war commerce of the world. While the immediate object is understood to assist in the upbuilding of trade with Europe, the firm is known to purpose extending the activities of its two corporations to all parts of the globe.

The new company will be known as the Foreign Commerce Corporation of America. It will be chartered under the laws of the State of New York. It has a nominal capital of 1,000 shares of no par value, all of which are owned by the Morgan firm.

The incorporators are J. P. Morgan, H. P. Davison, T. W. Lamont, E. R. Stettinius and also Grayson M. P. Murphy, who will resign from the Guaranty Trust Company to accept the presidency of the corporation. E. R. Stettinius will be chairman of the Executive Committee, and the directors of the corporation will be members of the firm of J. P. Morgan & Co. and Grayson M. P. Murphy.

This announcement follows the formation of the Foreign Finance Corporation, of which both Mr. Morgan and Mr. Davision are directors, the other directors being Arthur M. Anderson, J. S. Alexander, G. F. Baker, Jr.; G. W. Davison, H. D. Gibson, Seward Prosser, Charles H. Sabin, J. A. Stillman and Albert H. Wiggin. Mr. Anderson has been elected president of this corporation and is now organizing its staff. The company's activities will be devoted primarily to foreign fields.

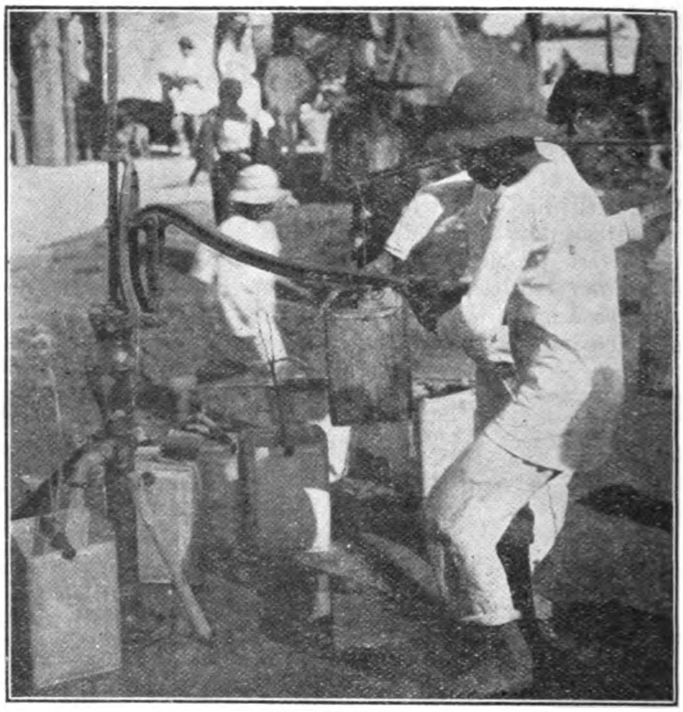
Two distinct ends will be served by these two corporations. One is a banking, the other a commercial company. The Foreign Commerce Corporation was formed because the firm looks forward to very important developments in foreign commerce. It is perfectly apparent, said a banker, that commercial conditions have been revolutionized by the war. The old methods of conducting trade have been made obsolete because of the enormous balance of trade against Europe in the United States. It has become necessary to devise new methods of carrying on commerce.

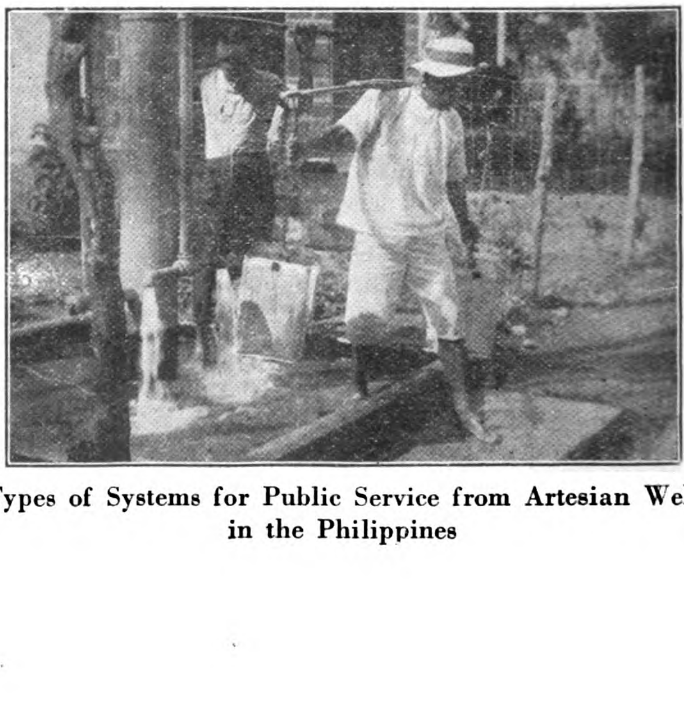
The Foreign Commerce Corporation will do a commercial business. It will deal in commodities. It will not extend any credits excepting such credits as any commercial house would extend to assist its customers in purchasing goods. In organizing such a company, said a member of the firm, J. P. Morgan & Co. are living up to the old traditions of the house as merchants. In London the Morgan firm of Morgan, Grenfell & Co. is still regarded in the light of merchants rather than bankers.

An entirely distinct field of foreign trade will be covered by the Foreign Finance Corporation. It will do an investment business, but also with a main eye to helping Europe in its American trade. The company is designed to finance European trade through purchase of foreign investments which may be offered in exchange for American goods. These investments will be confined to private issues. The company will not invest in foreign government securities. It will survey the foreign investment field very carefully because it is quite obvious that Europe will seek to interest American capital in foreign enterprises, as it will be impossible for European countries to liquidate the huge balance of trade against them only through sale of merchandise in United States. The Foreign Finance Corporation has power to issue debentures, and probably will exercise that function at some future time. It is characterized as entirely distinct in its functions from the American International Corporation, which is largely an operating company.

No definite information has been given regarding the ultimate capitalization of the two foreign corporations just formed by J. P. Morgan & Co. A member of the firm said that their "capital will be adequate for every possible purpose."

Grayson M. P. Murphy, who leaves the Guaranty Trust Company to become president of the Foreign Commerce Corporation of America, is regarded as exceptionally qualified for heading a commercial company because of his international experience in commercial banking. Arthur M. Anderson, who has been elected president of the Foreign Finance Corporation, is the head of the bond department of J. P. Morgan & Co. He has an international reputation as an expert in investments.





Types of Systems for Public Service from Artesian Wells in the Philippines

Misusing China's Credit

New York, February 5.—In the November, 1916 number of the Far Eastern Review, we commented upon the organization of an American commercial company whose advertised intention was to supplant Manchester in the cotton goods trade of China. The one asset of this company seemed to be a contract with certain high Chinese officials who had obtained the guarantee of their Government to the interest and principal of a $3,000,000 bond issue, the proceeds of which were to be used in the establishment of a line of steamships operating between China and America. This contract had all the earmarks of being identical with one concluded in 1915, by Mr. Philip Manson of Washington, on the one hand, and Mr. Liang Shih-yi, Tang Shao-yi, and other Chinese officials, who had obtained the guarantee of the Chinese Government to the interest and principal on a bond issue of $3,000,000 for the establishment of a steamship line on the other.

The weak spot of this transaction as far as China was concerned consisted in extending the government credit to a foreign company, a precedent, which, in her helpless condition, would have to be applied to other nationalities. It opened the door to graft and corruption and endless complications with other governments. Naturally, if the Chinese Government guarantees an American company whose main object was the crippling of British trade at a time when the latter could not well protect themselves against loss it was a foregone conclusion that the British Minister would promptly veto the Chinese right to extend credit in such an unwise manner. If the Chinese Government creates the precedent of guaranteeing the bonds of a company in which Mr. Liang Shih-yi, Tang Shao-yi, and their close friends are interested, then similar business deals will be consummated for the benefit of other powerful officials. If one foreign interest receives this governmental support for the sale of their bonds, then the Japanese, British, French, German, and Russian governments will bring pressure to bear on the Chinese to subsidize their nationals in similar enterprises. The principle is wrong.

This contract has again come before the public through the attack on the U.S. Shipping Board by Mr. Manson during one of the hearing before the Senate Commerce Committee on February 1. Mr. Manson's chief grievance is that the Board refused to allot his company any of the government ships. For some months he has been demanding an investigation of its activities.

Before the war he operated several steamers in the trade between the United States and the Bermudas. The Pacific and Eastern Steamship Company, of which he is the president, has $3,000,000 in bonds, underwritten by McBee, Jones & Co., of New York, and $2,000,000 in capital stock unissued. One-half of the value of these securities are owned by Chinese interests, the Chinese Government having guaranteed the company against loss for twenty-five years. The company, according to Mr. Manson, has decided not to buy vessels because of the high cost of construction, and has been unable to obtain allocation of ships from the Shipping Board. Pending such developments, his company has not endeavored to dispose of its securities to the public. It was said to be the purpose of the company to engage in the Far Eastern trade.

Mr. Manson said he was not operating ships in that trade because they were sure to lose and he did not feel himself justified in taking advantage of the offer of the Chinese government.

It would appear from Mr. Manson's testimony that the contract with his Chinese partners is still in existence, and the issuance of the bonds simply awaits a favorable opportunity to obtain the ships needed at a cheap price. If Japanese or British interests obtained such a concession from the Chinese Government an immediate protest would be registered by Americans in China. An immediate and frank pronouncement of policy should be made by American, British and Japanese organizations in China against this misuse of China's credit for the benefit of favored officials operating in conjunction with the subjects or citizens of other governments.

G. B. R.

Riveters to Ruin Old Japan

A sordidly commercial article was printed the other day, to the effect that a New York firm had secured a $5,000,000 contract for the construction of modern fireproof hotels, apartment houses and office buildings in Japan, which would have brought grief to the heart of the late Lafcadio Hearn. Such a statement shows how rapidly Japan is being occidentalized—a process which was fast enough in Hearn's day, but which has been accelerated almost past all belief in recent years.

Japan has made plenty of money out of the war and evidently intends to spend it. She is going to provide herself—even with the danger of earthquakes—with buildings of a type different from the sort to which the Japanese have been accustomed for centuries in order to keep pace with modern progress.

Shovels, high speed hoists and other equipment are being forwarded to Japan, and soon the familiar sounds made by the riveters will be heard in Tokio and Yokohama, and the Japanese skyline will be invigorated with a picture of an American riveter swinging out on a big girder hundreds of feet above the heads of the wondering Oriental populace.

Hearn in one of his books devotes a chapter to the "delightful impermanency" of Japanese life. He points out that it is all part of the Japanese scheme of things—the houses that can be put up and taken down in a day or so and which are devoid of furnishings.

He decried the "modern" spirit which was then inducing the Japanese to put up long, low wooden sheds, to be utilized as factories. In those sheds costly materials are being made which formerly were turned out in the Japanese artisan's home. Hearn could not see a still greater change coming, the change wrought by the first American office building, of steel and concrete construction, strong enough to defy earthquakes.

Also the rest of Hearn's picture of "impermanent" Japanese life seems in a fair way to be changed completely. He speaks of the contented life of the workman, who, according to the literary artist's picture, was a shade "trampier" than any of our old time journeymen in the early days of this country. These workmen in Hearn's day were accustomed to flit from one town to another, or to spend long days on the beautiful roads of Japan, doing just enough to furnish themselves with the means of bare existence, and to put it bluntly, living lives which closely approached the life of the "hobo," plus poetry which the average knight of the road in this country never has had in his system.

But with the coming of the big office buildings and the steel and concrete factories such a life must of necessity vanish altogether. The Japanese have been pretty hard at work during the last few years. Their business has been well organized, and the reaching out for better factory and office conditions is merely in line with the general business progress.

The populace has made so much money that the tramp artisan has found it well to stay at home. He no longer flits out on the highway among the cherry blossoms, just to satisfy the longings of his poetic soul, but stays at home and adds to the individual bank account by doing profitable work for some manufacturer who has a little corner of the Western market all his own and who is getting prices that enable him to pay his help many times what the old artisans got for their imperishable products.

Altogether it's a changed Japan, and one can imagine the shudder that will convulse the island when the first American riveter arrives at Tokio and says:

"So this is Toke, hey! Well, let's cook up a few hot ones and get the old put-putter busy. It's too darn quiet here for any use!"

The above article, from the "New York Sun," has reference to a contract recently secured by the George A. Fuller Company, 175 Fifth Avenue, New York, for the erection of modern fireproof hotels, apartment houses and office buildings—calculated to withstand earthquakes—in various Japanese cities, totalling some $5,000,000. Engineers and constructors of the first contingent sailed for Japan from America in January, and modern equipment including shovels and high speed hoists, valued at approximately $150,000, were also shipped to Yokohama. Mr. H. A. Harris will be in charge of the office of the Company in Tokyo.

Industrial Progress in Japan Promotes Introduction of American and Foreign Machinery

The industrial progress of Japan has been especially rapid during the period of the war and has been promoted to a large degree by the introduction of American and other foreign machinery. This industrial expansion is, to a great extent, quite recent, but in making the change from the many ancient methods formerly employed there is put into operation almost every type of machinery which other foreign nations have spent years in perfecting.

An idea of the increasing market for machinery may be obtained from the following table, which covers the imports of machinery and parts of machinery into Japan for the past five years: 1918, $29,248,999; 1917, $14,918,758; 1916, $8,135,407; 1915, $4,532,184; 1914, $12,471,182.

As Japan was securing a large percentage of its imports from Europe prior to the war, it will be noted that imports fell off considerably during 1915. However, during the same year the United States increased its share of this total from 20 to 32 per cent. and that of Germany decreased from 22 to 6 per cent. From that year to the present date the percentage of American machinery imported has continued to grow, until at the end of 1918 the United States was credited with over 80 per cent. of the total. An idea of the rate of increase in the sale of American machinery to Japan during the period of the war may be obtained from the following table:—

Year.	From United States.	From Great Britain.	From Germany.	From other countries.
	Percentage.			
1914	20	54	22	4
1915	32	58	6	4
1916	48	43	—	9
1917	57	38	—	5
1918	80	16	—	4

The principal types of machinery in the order of their importance and value of imports into Japan during 1918 follows:—

Machinery	Value.
Spinning machinery	$4,278,916
Steam boilers and accessories	3,767,635
Metal and wood-working machinery	3,320,892
Electrical machinery (all classes)	1,530,685
Sewing machines and accessories	1,544,424
Endless felts for paper making	1,316,675
Carding cloth	760,327
Gear cutters	603,667
Paper-making machinery	560,235
Gas compressors	501,059
Pumps	419,905
Pneumatic tools	367,610
Endless metal nets for paper manufacturing	345,786
Weaving looms	328,872
Iron rollers	321,054
Cranes	255,744
Gas and petroleum engines	252,728
Steam engines	231,665
Capstans and other winding machines	187,602
Locomotives and tenders	149,148
Hydraulic presses	142,137
Steam turbines	137,670
Printing machinery	119,710
Other machinery	7,804,853
Total	$29,248,999

As a result of these extensive imports the manufacture of various types of machinery has increased quite rapidly. The following figures show the value of exports of machinery from Japan during the past five years: 1918, $7,898,268; 1917, $4,597,023; 1916, $4,234,170; 1915, $992,835; 1914, $634,483.

Japanese Paper on Chinese Loans.

The Japanese paper *Nichi-Nichi* recently remarked that China is an international prodigal son who has no qualification to borrow money. It is regarded by certain of the Powers as an inevitable fate that every loan contracted by her will but carry her a step further towards an international administration of her finances. It is significant that lately the foreign papers in China have cried loudly that loans will lead to the downfall of the country, and have showed themselves sympathetic with the refusal of loans.

Which of these two attitudes is the Japanese Empire to encourage? asks the *Nichi-Nichi*. Does she intend to agree with the Powers in adopting the measure of financially placing China under an international administration or to refuse loans to China with the intention of awakening this country.

The recent loan (Y.9,000,000) is reported to be for supplementing the deficiency in the administrative expenditure of the Peking Government, and the proposed loan of £5,000,000 is equivalent to Y.20,000,000 or Y.19,000,000, supposing the net receipt to be 95 per cent. According to the conditions this sum is to be used not only to defray administrative expenses but also for disbanding troops. It is stated that there should be a reconciliation between North and South and that the use of the money be subject to control and supervision. This seems ridiculous, declares the *Nichi-Nichi*, with regard to the loan just made, as the sum of Y.10,000,000 will just suffice for the Peking Government to pull through the year-end monetary difficulties and excite the jealousy of the South.

So far as supervision of Chinese expenditure is concerned, remarks the *Nichi-Nichi*, past experience shows it to be hopeless in practice. While these conditions are impossible in connection with an emergency loan, they are sound ones for the larger readjustment loan that is forthcoming. The Powers will then wisely insist on a reconciliation of North and South, and, as the *Nichi-Nichi* says, "exercise more strict supervision over the use of the money or adopt some surgical measure which will be more efficient and thorough going than any method of supervision which has been tried so far with such unsatisfactory results. In this way, Chinese finances will be placed under the joint administration of the Powers. This has taken the form of a national loan adjustment committee in Egypt, and in China it will take the form of a national expenditure supervising committee."

Japanese-American Entente

A group of ten to twelve important American business men, who believe that the differences between the United States and Japan can be settled in a friendly spirit, set out for the Orient on February 28.

In the party are Wallace M. Alexander, of San Francisco, interested in manufacturing, shipping and in sugar production; Frederick J. Koster, of San Francisco, manufacturer, a director of the Chamber of Commerce of the United States, Doyall A. Osborne, vice-president of the Westinghouse Electric and Manufacturing Company; William T. Sesnom, former president of the Chamber of Commerce of San Francisco; E. R. Behrend, head of the Hammermill Paper Company, of Erie, Pa.; R. B. Hale, owner of a chain of retail stores on the Pacific Coast, and Walton M. Moore, a well-known retail drygoods merchant of California. It is not yet known who are the other members of the informal mission. Several foremost Eastern bankers have been invited.

The object of the expedition is to bring to Japan the ideas and the personality of representative American men of affairs on the assumption that their mingling with Japanese leaders will make for better understanding. It is proposed to discuss with all frankness and openness the sources of irritation in the relations between the two countries, and it is hoped that out of the unofficial conferences a better feeling between the two peoples will result.

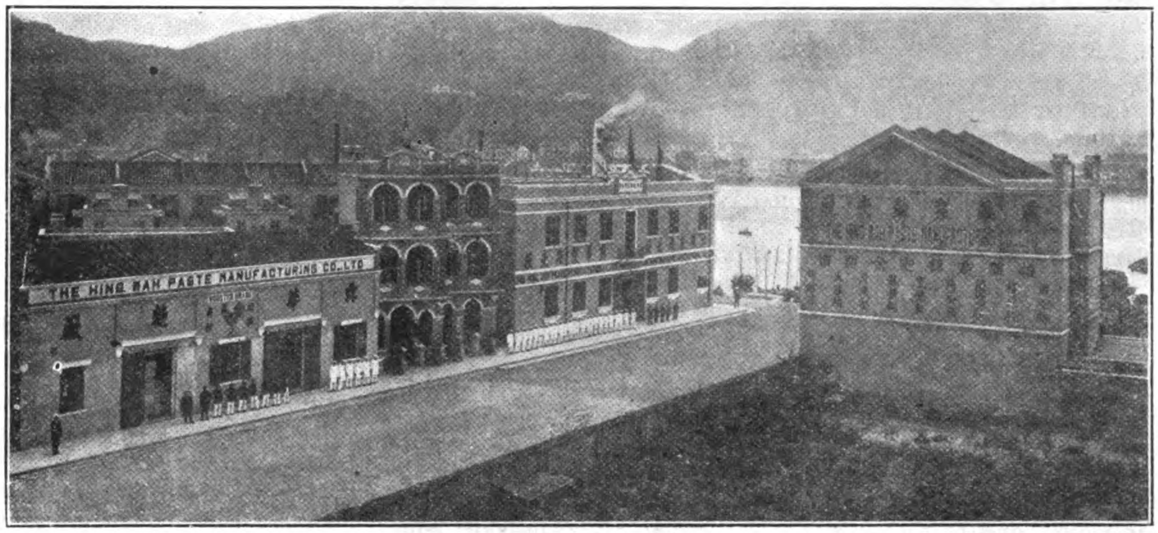
One of the main objects of the informal mission, which was initiated by the Japanese Relations Committee of San Francisco, is to build up a substantial public opinion in Japan in favor of friendly relations with the United States. It is hoped too, by the sponsors of the movement, that American public opinion will also be captivated by the dynamic idea of removing causes of distrust.

The American section of the Japanese Relations Committee was formed in 1915 after Baron Shibusawa visited in the United States, and a Japanese section was organized in Tokio. The suggestion for the forthcoming conference originated in Japan.

The Hing Wah Paste Company.

One of the most notable developments in the business life of Hongkong is the Hing Wah Paste Manufacturing Company which, with offices at Connaught Road Central, have large and continually increasing factories off Jordan Road, Causeway Bay. Here, the firm manufactures a great deal of cereal food, such as macaroni, egg-noodles, etc., and so large has its business grown that a new factory became necessary and this was opened some little time ago by the Hon. Mr. Lau Chu-pak, who is the

Mr. SUI NAI-LUN
The Chief Manager and Director of the Hing Wah Paste Manufacturing Co., Ltd.



Exterior of the Hongkong Factory

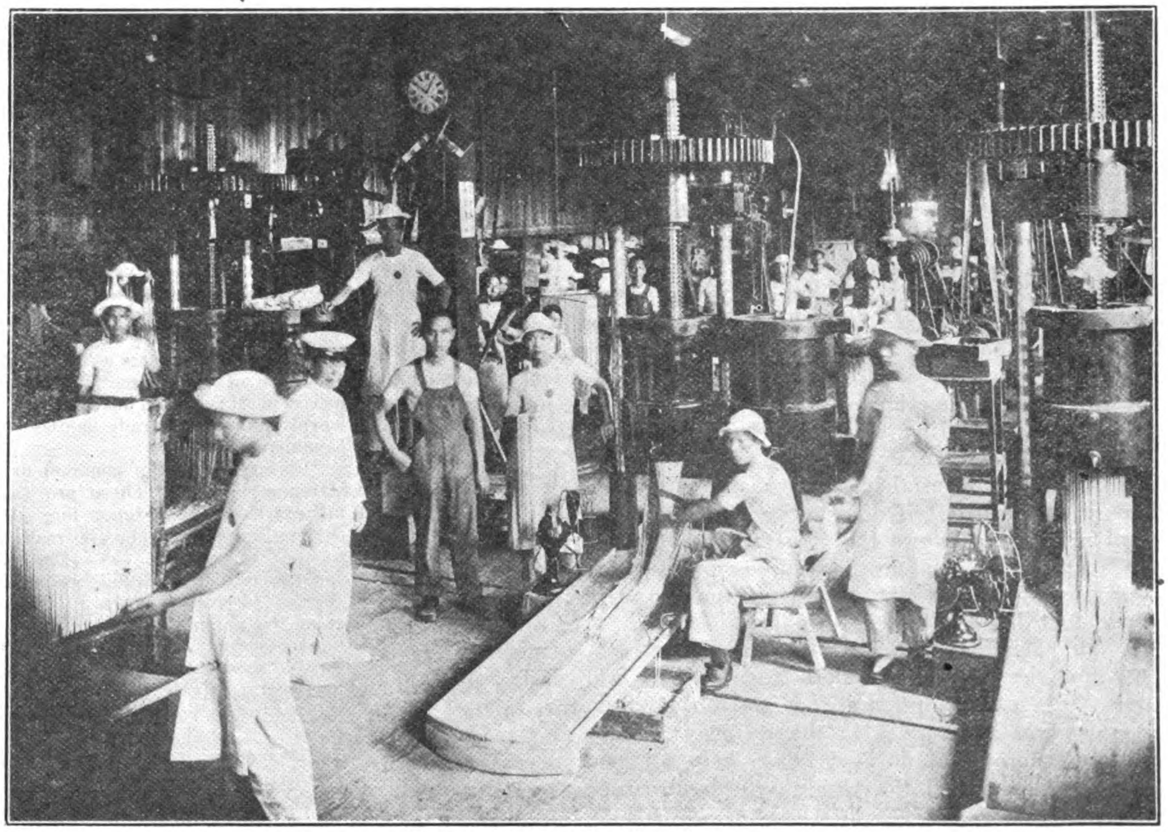
head of the Company. The building is a fine large one, equipped with first class machinery, and the various goods are manufactured under conditions which would satisfy the strictest Sanitary Inspector.

The enterprise is typical of many in Hongkong at the present time, it is purely Chinese, and is already known to the four corners of the earth, to which, in ever increasing quantities, the manufactured goods are sent. To the Colony of Hongkong such an enterprise is not without its significance. Industry in Hongkong is being promoted, and the Chinese are foremost in this promotion. Owing to the continued unrest in the interior of China, where want of protection to life and property and absence of trade facilities are keenly felt, the number of business men, Chinese, who have transferred their commercial activities to the Treaty Ports and to Hongkong, has been steadily on the increase, for in these places law and order prevail, which afford a safeguard to their capital, and helps them to reap the rewards of their enterprise and labor. Further, Hongkong is a suitable place for such factories as that of the Hing Wah Paste Co., inasmuch as there is an unlimited supply of labor.

One of the outstanding features of the Hing Wah Paste Company is that it is an industry solely supported by Chinese enterprise. There have in the past been many such undertakings, but, with one single notable exception they have somehow never developed to any appreciable extent.

The Hing Wah Paste Company was formed in Shanghai in 1916, as a private company registered in Hongkong, with a capital of only $60,000. In less than two years their productions became widely known, not only in China, but also in Europe and America and in the East Indies, and in other parts of the world. Indeed, the demand for the Hing Wah noodles, etc., was so great that the factories, though taxed to their utmost capacity, were unable to meet it. In order to cope with this state of affairs the capital in 1918 was increased to $200,000, and the Company was re-constructed as a public company with Head Office in Hongkong. Since then the capital has been increased to $1,000,000.

Nor has Shanghai been neglected; there are already works there, but these are to be considerably enlarged. Mr. Sui Nai-lun, the Chief Manager and Director of the Hing Wah Paste



Interior of the Shanghai Factory

Manufacturing Company, Ltd., has recently returned to the Colony from Shanghai after having made improvements in the business of the Company in the North. He also arranged for the erection of a new big flour factory in Shanghai. It is stated that the Company will have three principal Branches established in the North, one in Shanghai for handling its business in the provinces along the lower Yangtze, the second in Hankow for the provinces along the Upper Yangtze and the third in Tientsin for the provinces in the North, the three Eastern Provinces, Manchuria and Mongolia. While Mr. Siu was in the North he was warmly welcomed in official, commercial and industrial circles and many shares in the Company were taken up.

North China's Commercial Weather Gauge

The North China Desk Hong List, 1920. A general and business directory for Shanghai and the Northern and Yangtze River Ports, etc. Issued by the North-China Daily News and Herald, Ltd., Shanghai.

The 1920 North-China Desk Hong List appears in its familiar red cover and maintains its excellent standard of clearness and style. Some idea of the work of producing a directory in China may be gathered when the reader is informed that over 22,000 corrections have been made in this edition alone. The increasing changes that inevitably take place throughout the Ports make the work more difficult, yet despite this fact there are few typographical errors. The book contains many more pages than the preceding edition and it is interesting to learn that the addition is mostly due to the growth of Shanghai. New foreign hongs and businesses, listed since the 1919 edition, make a total of nearly 200, with over 50 Chinese firms. Import and export firms head the list with something between 60 and 80, whilst Commission Agents are a close second. Resident representatives are gradually increasing and so too are the professions. The Residential Section shows an increasing number of foreign residences every year, whilst the Shanghai Who's Who Section intimates an increase of nearly 1,000 foreigners since 1919.

Amongst the new headings we notice "Shipping" and the "Shanghai Business Directory." The majority of firms appear under this latter heading.

The Shipping Section, containing as it does the naval squadrons at Shanghai and on the Yangtze, and the merchant steamers, together with their foreign staffs, will prove of infinite value to those interested in shipping. It would perhaps enhance the value of this section if the staffs of the boats appeared in the Shanghai Who's Who to facilitate the location of individuals.

The Business Directory, an entirely new section, is what has been badly needed for some time past. Shanghai is growing every year and it becomes increasingly more difficult to keep touch with the activities of various firms and the location of new ones. The list is well thought out, being doubled up into three columns and compressed as much as practicable, and is dealt with in an entirely independent way. Between 1,000 and 2,000 firms and businesses are listed under their particular business headings in this section and although the work is in nowise complete, the succeeding editions should prove of inestimable value to merchants and newcomers alike.

A suggestion might here be made to include Agencies. There would seem to be no direct way of obtaining such information and unless one knows the local representative or firms carrying such agency it is almost an impossibility to locate same. With the growth of this city it becomes more and more necessary to have first hand direct information.

The Missionary Section shows an increase of nearly 2,000 missionaries and 600 missions and to those who desire trade information of the interior this section is of value. Very little change has taken place in the Railway Section or the Outports, but one notes that outport hongs have slightly increased, which naturally increases the foreign residents proportionately.

Shortage in Abaca due to Pests

Indications of a growing shortage in the production of abaca in the Philippine Islands have been showing from time to time since the new year, the latest discouragement being two insect pests that have appeared in abaca plantations in Davao and Samar. A memorandum of the Bureau of Agriculture of the Philippine Islands on these pests says, in part:—

"One is known as Thosea species, a lepidopterous insect, and the other is a leaf miner. The former named pest has been identified by the pest control section of the Bureau of Agriculture. The latter named pest is being studied.

"The pest known as Thosea species at its larval stage, attacks coconuts, abaca and other growing plant life and eats the entire leaf, leaving only the stem of the leaf. The leaf miner eats the under side of the abaca leaves, after which the leaves die.

"The above-mentioned pests have become very prevalent in the Davao gulf abaca plantations, where they are destroying large areas of growing abaca. On one abaca plantation alone, the leaf miner has attacked over 20,000 abaca plants. The pest known as Thosea Sp. is prevalent throughout the Davao gulf region, but is more numerous in the neighborhood of Lais, Davao."

Abaca planters of the Davao gulf region are becoming alarmed and have requested assistance from the Bureau of Agriculture in an endeavor to control these pests. Whatever the total production may be, a great effort is being extended by the Government experts to reduce the production of low-grade fiber. It is claimed that this campaign will reduce the total yearly output by at least five per cent. as compared with the output of 1919, when more than fifty per cent. of the output of 1,166,000 bales was of low-grade fiber.

Hanson and Orth's monthly statement for January, 1920, shows that 540,821 bales of abaca were sent to the United States in 1919, as compared with 690,258 in 1918 and 735,735 in 1917. There were 73,000 bales of abaca *en route* from Manila to the United States at the time that this report was compiled.

Exporters Adopt Uniform Foreign Trade Language

Instead of a babel of tongues, American exporters now have a uniform language for foreign trade. A standard meaning of common export expressions was recently agreed upon at a conference at the India House, New York, attended by representatives of the National Foreign Trade Council, National Association of Manufacturers, American Manufacturers' Export Association, American Exporters' and Importers' Association, New York Produce Exchange, the Merchants' Association, the Chamber of Commerce of the United States, the Chamber of Commerce of New York, the Philadelphia Commercial Museum and the Bureau of Foreign and Domestic Commerce.

To end the interminable wrangles between domestic sellers and foreign buyers as to precise obligations implied by the expressions, f. o. b. (free on board), f. a. s. (free alongside ship), c. & f. (cost and freight), c. i. f. (cost, insurance and freight) and l. c. l. (less than carload lot), these authoritative trade bodies have worked out official interpretations, which shall be accepted as the standard in dealing with their members. This codifying of the unwritten laws and customs of foreign business was undertaken partly as a result of urgent requests from the American Chamber of Commerce in London and the American Chamber of Commerce in Mexico. The definitions will be disseminated in all parts of the world by private trade bodies and the Bureau of Foreign and Domestic Commerce.

Referring to the common expressions used in export trade, a joint statement said: "These are the normal situations on which an export manufacturer or shipper may desire to quote prices. It is understood that unless a particular railroad is specified, the property will be delivered to the carrier most conveniently located to the shipper. If the buyer, for the purpose of delivery or in order to obtain lower transportation charges, desires that the goods be delivered to the carrier further removed from the shipper and entailing a greater cost than delivery to the carrier most favorably situated, the carrier to which the buyer desires delivery of the goods should be named in the quotation. The term 'carrier' or 'railroad company,' as used herein, applies to river, lake or coastwise steamship companies, canal boat companies and barge lines, when so specified in this quotation."

A motion by O. K. Davis, secretary of the National Foreign Trade Council, that the entire phrase, such as "free on board" instead of the initials "f. o. b." should be used in specifying terms, was adopted.

Rail-and-Water Link Facilities in Japan

THE harbors in Japan have mostly been left in their natural state, and it is only within the last twenty years that the authorities have been awakened to the necessity of reconstructing some of the more important harbors, the accommodation of which had become quite inadequate to meet the requirements of the growing trade. Some projects have since been started by the Railways for improving the rail-and-water link facilities at several ports, including Yokohama, Nagoya, Mikuni, Osaka, Shimonoseki, Moji, Hakodate, Aomori, Otaru, and Muroran, but little has as yet been done in this direction.

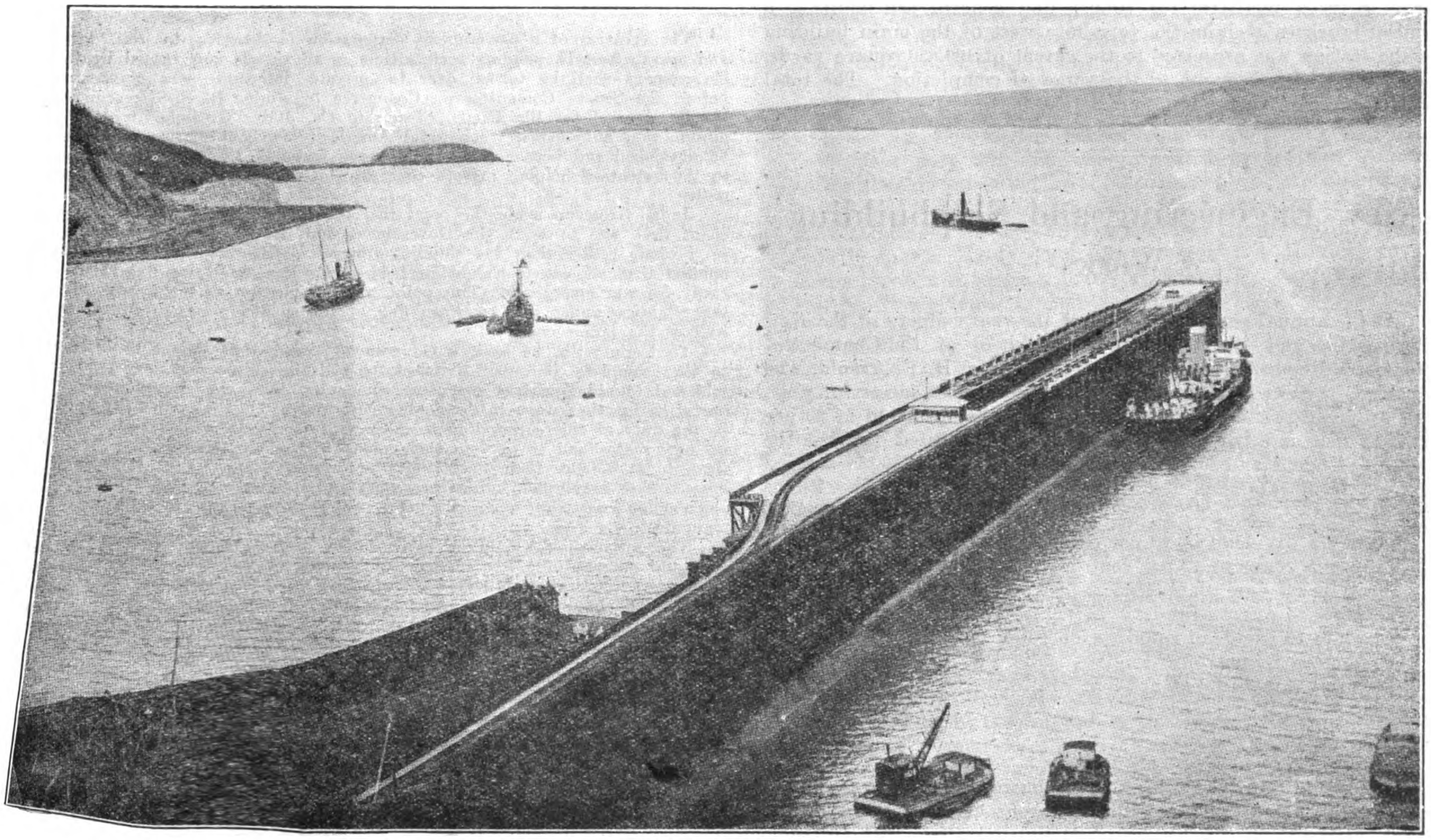
Yokohama Harbor.—The reconstruction of the Yokohama harbor was started, in 1899, by the Finance Department, and the reclamation, the provision of new quay-walls, and other works were partially completed by 1907, when the Railway Board proceeded to lay double-tracked chord, connecting the new pier with Yokohama station, for a matter of 50 chains. This line is, for part of the way, located upon the reclaimed ground and passes over the canals by two bridges, built to allow the passage of lighters. The cost of construction of the chord and connected works amounted to Y.508,000.

Nagoya Harbor.—Upon the completion of the harbor works at Atsuta near the city of Nagoya, a 5-mile single track was laid to bring the new port into connection with Nagoya station. On the other hand, a spur branching off therefrom was laid to the timber yard at Shiratori, which yard is under the management of the Department of the Imperial Household. Altogether Y.970,000 was expended upon the laying of the branches.

Osaka Harbor.—The harbor works at Osaka were started in 1897 and partially finished as regards dredging, the provision of the breakwaters, and the construction of the pier. As a temporary expedient, pending the completion of the whole works, it was decided, in 1910, to extend the Osaka-Ajikawaguchi section of the line and link it up with the sidings in the shore station yard of Sakurajima by means of two-sided piers, which are designed to accommodate large ships of between 1,000 and 4,000 tons. The extension has cost about Y.470,000, and Y.6,000,000 will be required for the laying of the projected line branching off at Imamiya on the Kansai Line and leading to the pier of the reconstructed harbor. The work is expected to be started next year.

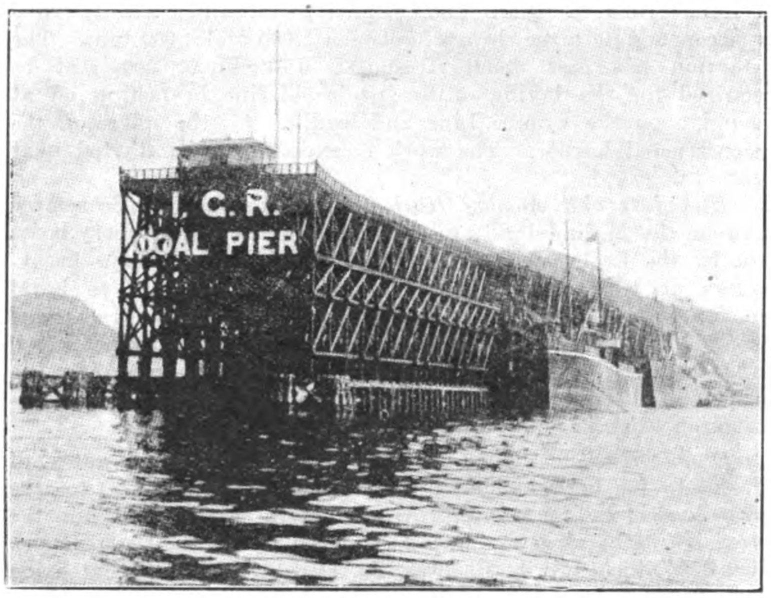
Hakodate and Aomori Harbors.—The through traffic service between the Main Island and Hokkaido is effected by ferry boats run by the Railways. Upon the completion of the new breakwaters at Hakodate harbor, the Railways proceeded to build wooden piers, 550-ft. by 44-ft. and by 165-ft. on the reclaimed ground contiguous to the station yard. The total cost amounted to Y.450,000. The Railway Management contemplates erecting a special pier in the harbor of Aomori, too, where the reconstruction work is now going on.

Otaru Harbor.—Otaru is one of the principal gates of Hokkaido for both exports and imports. In response to the growing demand for the improvement of its harbor facilities, the provision of breakwaters was early taken up by the Government. The Hokkaido Colliery Railway Co. also projected the extension of Temiya station, contiguous to the port, and proceeded to reclaim the foreshore to the extent of 102,700 square yards. As a result of the nationalization, however, the work was taken over by the Railway Management, which, with the idea of equipping the land with exclusive facilities for the exportation of coal, provided a coal yard and an overland pier. At the same time a coaling pier, measuring about 1,000-ft. long, 7-ft. wide, and 60-ft. high, was built into the sea, so that the cars might be unloaded direct into the bunkers of vessels moored alongside the pier. The pier can deal with more than 1,000,000 tons of coal per annum. In view, however, of the fact that the reclaimed land at Temiya is able to handle only one-third of the traffic



Elevated Pier, Muroran Harbor, Japan

from or to the port of Otaru, another and more ambitious project for land resumption is now contemplated on the opposite side of the city. About Y.5,250,000 will be required for the new project, which involves the reclamation of the foreshore for 493,750 square yards. Start was made with a part of the work.



Coaling Pier, Muroran Harbor, Japan

Muroran Harbor.—A similar reclamation work has been carried out in the harbor of Muroran, which has recently acquired importance as an outlet for coal from the Island. The foreshore was reclaimed to the extent of about 94,800 square yards, the coal yard enlarged, and an overland pier and a coaling pier, 1,200-ft. long, 70-ft. wide, and 63-ft. high, were provided. At the same time the foreshore was dredged to a depth of more than 28-ft. below the low tide level.

These improvements have increased the coal-loading capacity of the harbor from 800,000 tons to 1,200,000 tons. Then, to provide track facilities for timber and general commodities, a similar work to reclaim the foreshore west of the main building of the station was projected to the extent of 169,850 square yards, and it has been brought to the verge of completion. The total cost is expected to amount to Y.2,370,000.

New Engineering and Shipbuilding Works

At the annual general meeting of the shareholders of the New Engineering and Shipbuilding Works, held at the Chamber of Commerce Rooms, Shanghai, on March 19, Mr. H. E. Arnold, who presided, reviewed the working of 1919 as a most successful year, and proposed resolutions for the payment of a dividend of 20 per cent. as well as a bonus of 40 per cent. He pointed out that the balance of profit and loss account, including Tls. 33,700.18 carried forward from 1918, was Tls. 831,587.23, which was dealt with as follows:—

To pay a dividend of 20 per cent.	Tls. 129,335.00
To pay a bonus of 40 per cent.	,, 258,670.00
To write off new plant...	,, 100,000.00
To place to reserve fund	,, 259,500.00
To place to dividend equalization fund ...	,, 25,000.00
To donate to patriotic funds	,, 20,000.00
To carry forward balance	,, 39,082.23
	Tls. 831,587.23

The actual Capital working in the business last year amounted to between 35 and 40 lacs and the profit gave a return on the funds utilized in the business of approximately 22 per cent. During the year the Company built two steam steel towboats, two steel and wood steam and motor launches, four composite motor vessels, one steel pontoon and two steel lighters, in addition to a large amount of repair work. Satisfactory progress has been made on the four 2,000-ton steamers, the first of which has been launched and will shortly be delivered to the owners, and the remaining three vessels will be completed and delivered this year.

The Company has also in course of construction one steel towboat, two steel launches, three steel lighters, four steel pontoons, and one motor launch. Further contracts have been entered into for the construction of two 2,600-ton steel cargo steamers, one steel light tender, two steel lighters and one motor launch.

The following amendment to the resolution (*b*) was proposed and carried:—

(*a*) That the paid-up share Capital of the Company be increased from Sh. Tls. 646,675.00 to Sh. Tls. 750,000.00 by the issue of the 20,665 shares being the balance of the unissued shares of the Company, ranking for dividend and in all other respects *pari passu* with the existing shares of the Company.

(*b*) That the said 20,665 shares be offered in the first instance at a premium of Tls. 15.00 per share to the members of the Company in proportion as nearly as may be to the number of shares held by them respectively on the 8th day of April, 1920, but so that no fractional part of a share shall be issued, and upon the footing that the full amount of each share taken up plus the premium (making together Tls. 20.00 per share) shall be paid to the Company upon acceptance of the offer, and that such offer be made by notice specifying the number of shares to which the member is entitled and limiting a time within which the offer, if not accepted by payment, will be deemed to be declined, and that the Directors be empowered to dispose of the shares not taken in response to such offer, as also any surplus shares, in such manner as they think most beneficial to the Company.

American Steamships for China Coast Trade

The creation of a Government corporation in America to sell, lease and operate vessels, pending such a time as all vessels now owned by the Government shall be turned over to private interests, was advocated before the Senate Committee on Commerce by Judge B. S. Grosscup of Seattle, counsel for the Pacific Steamship Co. Judge Grosscup took the ground that an adequate, successful American merchant marine could not be developed and kept going unless it was fostered by the Government to the extent of helping private concerns in the establishment of new routes.

Judge Grosscup made the point that the primary purpose of the merchant fleet was to serve the Government and the people of the country as a whole rather than the shipping interests. He also expressed the opinion that all vessels should be held under the American flag to be ready for war emergency. This point was brought out when he advocated the retention under the American flag of the smaller types of vessels as well as the larger ones.

To begin with, he said, a Government corporation should be created to take complete charge of the fleet, to sell the ships that ought to be sold and to aid American operating companies by easy terms and cooperation in other ways in developing new routes. For example, it would be the duty of this corporation to meet with operators who desire to open up new routes and to go into their plans with them thoroughly, helping them to so balance their fleets that they would have fast transoceanic vessels, slow vessels and mixed passenger and freight vessels, with smaller ships doing coastwise work in foreign waters to act as feeders for the main fleet.

The corporation should be given broad discretionary powers so that it would operate in a less cumbersome manner than the Shipping Board now acts, according to Judge Grosscup, and as an incentive to private operators it should sell them ships at a rate below the so called market rate so the cheap initial cost would serve in lieu of a subsidy to put them on equal operating terms with foreign competitors. He declared it impossible to compete under the present initial cost.

Judge Grosscup's advocacy of the sale of the smaller vessels at a practically nominal cost carried the discussion into a wide field.

Judge Grosscup pointed out that they might never be run at a profit in themselves, but that if they were barely self-supporting or even were operated at a loss they would be valuable if used as feeders in the Mediterranean, the Baltic and the China coast. for transoceanic fleet. He took the ground that they would bring better results in this manner than if sold to foreigners, since the money they would bring in sales would not be sufficient to build many new big vessels.

Mr. Lamont in the East

Mr. Thomas W. Lamont, of J. P. Morgan and Company, is now in China in connection with the proposed Consortium loan to China. He spent some time in Japan discussing with the bankers of that country the details of the proposed Consortium and the possibility of co-operative effort between America, Great Britain, France and Japan in the development of public enterprises in China. In the party with Mr. Lamont are Mr. Martin Egan, assistant to Mr. Lamont and a member of the staff off J. Pierpont Morgan; Mr. Jeremiah Smith, Counsel for Mr. Lamont; Mr. J. Ross Tilford, secretary of the American Group; Mr. Richard Wood Randolph, formerly chief engineer of the American section of the Hukuang Railway project; Dr. John A. McCreery, and Mr. and Mrs. Jesse Lynch Williams, a noted author and playwright.

Mr. Lamont is one of the outstanding figures of international finance. For ten years he has been a partner in the Morgan houses—J. P. Morgan and Company of New York, Drexel and Company of Philadelphia, Morgan, Grenfell and Company of London, and Morgan, Harjes and Company of London—and one of the leaders in their manifold activities, domestic and foreign. His rapid rise and successful career typify the great boast of American life that opportunity always is open to the man of ability and character. He went to New York an unknown young man without resources except an excellent education, the quality of a fine old family and those assets which come from the good parental home. In his early thirties he was one of the organizers and vice-president of a great American bank, at forty the late J Pierpont Morgan invited him to join his houses as a partner.

Mr. Lamont prepared for college at Exeter and entered Harvard in 1888. It was a class that contained many young men destined later for notable careers in American life, but there was common recognition of the ability and character of Mr. Lamont and he soon became an acknowledged leader among his fellows. He wrote a good deal at college, developing an interest and quality in literature that he inherited, and for a time contemplated a career as a writer. Soon after graduating in 1892 he accepted a position on the staff of the "New York Tribune," then under the personal direction of the late Whitelaw Reid. He remained in journalism only a few years, but he has continued his interest in letters and his contributions to contemporary financial literature are notable. He left journalism for business and assisted in founding a mercantile house in which he retains a substantial interest and a consulting supervision.

Mr. Lamont's ability attracted the attention of New York financiers and business men and when a group of them formed the Bankers' Trust Company, now in the first rank of such corporations, he was asked to join its staff and devote all of his time and talents to its upbuilding. His service in the United States was so conspicuous that he was offered and accepted the vice-presidency of the First National Bank. There again he served with distinction, resigning to accept partnership in the Morgan houses. Up to this time his work and studies had been directed largely to railway and the larger industrial and commercial financing and this was the scope of his first activity with Mr. Morgan and their associates. Later he was to interest himself in British, French and Far Eastern financial problems and speedily to claim place in the front rank of world experts.

Probably his most conspicuous service relates to the world war and the peace that terminated it. When Germany struck, the Morgan houses placed their services and their resources at the disposition of the Allies and it fell to Mr. Lamont and the American partners to arrange credits for them in the United States upon a scale never before attempted or contemplated, and to place contracts for munitions, supplies and foodstuffs in stupendous quantity. They carried the burden until relieved two years later by the United States Government itself, upon entry as a combatant on the side of right, and in that time they provided enormous credit for the Allies, and placed record contracts.

Following these tremendous operations the firm tendered their service and resources to the United States Treasury and Mr. Lamont was first called upon to serve the Treasury as one of its representatives in the American delegation to the Peace Conference at Paris. The latter experience renewed and extended his acquaintance with Japanese statesmen and financiers and increased his interest in the financial problems and relationships of the Far East. Since returning from Paris, Mr. Lamont has been active in stimulating American interest in the serious financial problems that harass some of the European Allies of the United States and in arranging loans and credits to tide them over the difficulties of reconstruction and readjustment. He also has labored incessantly for the ratification of the Treaty of Peace and the establishment of the League of Nations.

Mr. Lamont's interests are not confined to finance, but embrace a notably wide range. He often has been compared in the catholicity of his interest to the late President Roosevelt and his associates admit that he can carry forward simultaneously a wider range of work than any of them. He has labored long for the improvement of educational methods, and has been active in promoting the affairs of Exeter Academy, Harvard and Smith Colleges, the latter a great institution for the education of women. He is an active Trustee of the great Foundation for the Advancement of Teaching, established by the late Andrew Carnegie.

His interest in journalism continues and he recently purchased the "New York Evening Post," an independent liberal organ of wide influence, which he placed under the control of a group of distinguished citizens as trustees. He has supported and worked in various charitable and humanitarian movements and has contributed to the improvement of the American drama and stage. He plays a reasonably good game of golf in and out of season and he cruises and fishes in his vacation time, which he shares in unbroken comradeship with Mrs. Lamont and their four children.

In politics he is a liberal and in person democratic, friendly and candid.

P. 12,000,000 Port Improvement at Manila

The Senate of the Philippine Islands has recently passed in special session a bill authorizing the floating of a P.12,000,000 bond issue for the development and improvement of the port of Manila. The measure was passed on the last night of the regular session by the lower house during the regular period, but was not acted upon by the Philippine Senate.

This money will be spent in developing the present waterfront and in building the new dry dock that has long been a proposed addition to the harbor equipment.

A free port bill was also presented at the special session, and, although it has not been passed upon as yet, it is confidently believed in official circles that its passage is assured. The area mentioned in the bill as the site of the prospective free zone is in the Tondo north shore waterfront district, the same section that was examined and approved by Paul P. Whitham, United States Trade Commissioner.

Peking papers give full credit to Mr. Chow Tze-chi, the new head of the currency bureau, for the projected establishment of a mint at Chapei, Shanghai. Mr. Chow, who has held office formerly as Minister of Finance, Minister of Communications, Minister of Commerce, Agriculture and Industry, is one of the most progressive of Chinese officials. To his credit are many reforms, and if he is able to hold the directorship of the currency bureau long enough he will probably do much towards the reform of currency in China. Already he has instituted two conferences a month at his bureau for the consideration of questions of moment connected with currency matters, and out of these conferences may spring some definite program for the betterment of financial and currency conditions. One thing contemplated by the bureau is the organization of a Currency Inspecting Committee for the inspection and examination of the composition of coins minted throughout the country as well as those in circulation. This will probably be put into effect in connection with the establishment of a mint at Shanghai, the machinery for which has been ordered, according to report.

The New British Minister to Peking

The appointment of Mr. Beilby Alston as British Minister to Peking to succeed the Right Hon. Sir John Jordan will be acclaimed by his friends. Mr. Alston, who is at present British Minister in Tokyo, brings personal knowledge of both Japan and China to his task, as well as long experience in the diplomatic service of his country. He is thus peculiarly equipped to meet the new conditions which are gradually developing in this quarter of the globe, and will prove a competent guardian of British interests. Mr. Alston is keenly alive to the vital importance of the questions developing in China and the Far East; fully realizes the onerousness of the post which he will occupy, and has the diplomatic flair to enable him to deal with the problems which will confront him. He was born in October, 1868, and is the second son of Sir Francis Alston, K.C.M.G., also of the diplomatic service. He entered the service of his country at the age of 21, since when he has had considerable experience in posts as varied as the countries which he has visited. His first post abroad was at Copenhagen, where, in 1895, he went as third Secretary in the diplomatic service. In 1896 he was made Secretary to the British Plenipotentiaries at the Copyright Conference in Paris, and later in the same year was transferred to Buenos Ayres as acting second secretary, and also officiated as Charge d'Affaires. In 1898 he was appointed Secretary to the British representative at the Brussels Sugar Conference, and was similarly appointed to the conference in 1901-2. At the time of the Coronation of the late King Edward he was attached to the foreign representatives accredited to attend the ceremonies. In 1906 he accompanied Sir Henry Austin Lee in a tour of the consular offices of France, and in 1909 was appointed attache to the Chinese Naval Mission under Prince Zai Sun on its visit to England. He had a similar appointment with Prince Tsai Chen who attended the coronation of King George V. In the same year he went to Siam as secretary to Prince Alexander of Teck's Mission to the coronation of the King of Siam, with rank of Acting-Councillor in the Diplomatic Service, and later was sent to Peking as Acting Councillor of Legation with regard to an inquiry into the leases in British Concessions in China. He visited Japan, returned to the Foreign Office in London, and in 1913 was again appointed Acting-Councillor at Peking, and acted as Charge d'Affaires. In 1916 he again acted as Charge d'Affaires, which duties he carried out for about a year during the absence of Sir John Jordan in England. Upon Sir John's return Mr. Alston accompanied the British High Commissioner to Siberia, and upon his return was given the rank of Minister Plenipotentiary to Japan, a position which he will vacate to return to Peking. He will take up his duties in the Chinese Capital with the best wishes of all interested in the development of affairs in China, and with these we join in wishing him a distinguished career.

Chinese Eastern Railway Control

There has been a great deal of trouble in connection with the contrôl of the Chinese Eastern Railway, but by March 17, the Chinese authorities managed to secure dominance in the direction of affairs. On that date a strike of railway employees ended and found the Chinese flag flying in place of the Russian. The workmen considered that the strike ended in a complete victory for their cause, inasmuch as the Commander of the Chinese troops indicated that the Chinese authorities were sympathetic with the revolutionary movement. The authorities of the present Siberian Government recognized the Chinese sovereignty over the Chinese Eastern Railway and urged the dismissal of General Hovarth, who previously directed the affairs of the railway, and the appointment of a Chinese manager of the railway in his place.

This railway has been a bone of contention during the whole course of the Russian trouble, and perhaps now that the Chinese have managed to secure control, the international scramble will cease for the time being at least.

General Horvath had all along strongly maintained that in view of the close proximity of the Chinese Eastern Railway to the South Manchuria Railway, there is no possibility of restoring the police power to China, even though the Line may be redeemed The General alleged in support of his argument certain treaties concluded between the Governments of Russia and Japan, which cannot be applicable on this occasion. TThe General insisted on having 30,000 Russian police but this number was criticised by the Kirin Tuchun as being superfluous and only consented to the maintenance of 500 Russian police, which may be alloted special duties, such as, guarding the various stations, the treasury, the locomotive workshop, and general store. As a result of the strong protest on the part of the Tuchun, who is supported by all logical arguments, the Russian authorities made a compromise by consenting to have the Chinese counter-proposal discussed with a view of arriving at a definite decision, that would be satisfactory to all parties concerned. This, they did, and on the 28th of February, the point in dispute was at length settled satisfactorily between the General and the Tuchun. The Tuchun, as well as the Civil Governor of Kirin, both acting under the directions of Governor-General Chang Tsao-lin, behaved excellently well in this instance; their actions and promtitude in effecting such a satisfactory conclusion deserves high commendation and praise. It speaks for the loyalty of the respective authorities, who have the interest of the Republic at heart. The American Legation at Peking, in a communication to the Chinese Foreign Office, highly approved of the actions taken by the Chinese Government in accepting the proposal of the Kirin Tuchun regarding the control of the railway. The American authorities hope that the Government will see its way to extending to foreigners as well as Chinese adequate protection and travelling facilities.

The following is the proclamation issued by General Pao Kuei-ching, President of the Board of Directors of the Chinese Eastern Railway:—"I have frequently pointed out that the Chinese Eastern Railway is situated in Chinese territory in which the existence of other government power is inadmissible, as there is strife between Russian political parties, which creates disorders and interferes with the work of the railway. Owing to the fact that General Horvath, Assistant President of the above board, has assumed the functions of government and proceeded to adopt a policy of military force for political aims, the Russian working population has declared a strike and begun a revolutionary movement. In order to defend China's sovereign rights and maintain normal conditions on the railway, I have suggested that General Horvath shall renounce full political power in the railway territory so as to enable China to fulfil her obligations. All arms are to be handed over to and guarded by specially appointed agents. At the same time I consider it my duty to declare that I cannot allow in future any Russian party or individual to interfere with the work of the railway for political purposes. I therefore request the population on the railway territory to proceed with their peaceful work."

Shanghai Tramway Returns

The following is the Traffic Return of the Shanghai Tramways (Foreign Settlement) for the month of February, 1920, and for two months ended 29th February, 1920, with figures for the corresponding periods last year:—

	February, 1920	February, 1919
Gross Receipts	$177,640.81	$139,937 52
Loss by currency depreciation...	43,900.64	34,259.55
Effective Receipts ... ...Mex.	$133,740.17	Mex. $105,677.97
Percentage of loss by currency depreciation	26.05	25.73
Car Miles run	365,922	317,065
Passengers Carried	7,846,030	6,248,949
	2 Months ended 29th February, 1920	2 Months ended 28th February, 1919
Gross Receipts	$359,534.10	$299,016.52
Loss by currency depreciation...	89,846.27	70,949.16
Effective Receipts ... ...Mex.	$269,687.83	Mex. $228,067.36
Percentage of loss by currency depreciation	26.34	24.98
Car Miles run	759,203	677,855
Passengers Carried	15,998,747	13,482,476

Will the I. G. do the Right Thing?

The death of Mr. R. J. White, Chief Appraiser of the Chinese Maritime Customs, Canton, was recently reported by wire. This makes two Chief Appraisers who have died lately, both in "harness," and the fact calls to mind how the members of the Customs Service, particularly the Out Door Staff, have struggled along on inadequate salaries, often in very unhealthy ports, and more than often badly housed, with no prospect of a few short years of rest and quiet in the hardly earned twilight of their lives, until death releases them from labor. Last March a combined and strongly supported movement of the Out Door Staff brought about a very much overdue increase of salaries, and also certain improvements in regard to the retiring allowances, and in October last the Inspector-General of Customs received a deputation from the Out Door Staff who wanted to bring to his notice their many and certainly genuine grievances. Surely, the disgrace of seeing old service members being compelled to work until decrepitude found them dying in harness, as witnessed in the case of the two old Chief Appraisers lately gone to rest (who put in between them 77 years' Customs service) could be avoided. Another point which is of importance in connection with a Public service which touches all the big nations is that a little publicity regarding administrative expenditure would not be amiss. The Inspector-General of Customs, Sir Francis Aglen, has the opportunity of going down in China history as a great administrator. But he must meet the changing conditions in the proper spirit and be farsighted enough and bold enough to lay it down emphatically that he upholds the doctrine that every servant is worthy of his hire, and that those who sweat blood for China must be paid adequately and be enabled to live decently and in accordance with the new principles which are now finding such world-wide expression. If he fails in this he merely invites servants who are not given a chance properly to meet the great change in living conditions and costs to take action on their own behalf—as working men throughout the whole world are now successfully doing. This should be avoided at all costs both in the interests of the service over which the Inspector-General presides and those of international trade. The out-door staff of the Customs in particular assists materially in the collection of the record customs revenues being secured by China, and we feel sure that the Chinese officials who are patriotic and realise what an adequate customs service means to their country will be only too eager to see that these men are permitted the enjoyment of decent and adequate living conditions. China does not want to "lose face" on this question, any more than the Inspector-General does. The big men of the other parts of the world are realising the significant upheavals that are taking place and are rising in the proper spirit to meet them.

Report of Philippine National Bank

The report of the President of the Philippine National Bank to the stockholders shows that the bank made a profit of 35.68 per cent. on its paid-up capital last year, the paid-up capital being P.10,977,430, and the profit P.3,916,897.49.

These profits would have been P.4,716,897.49 if it had not been for the segregation from the profit and loss account of an item of P.800,000 for past due taxes from the date of the inauguration of the bank on May 25, 1916, which were not paid in previous years on account of a fundamental error in accounting.

The net worth of the bank at present is represented by the following figures:—

Paid-up capital	P.10,977,430
Legal reserve	3,495,756
Undivided profits	1,526,814
Total	P.16,000,000

Ingenious Bridge Builders of Java

The natives of Java have a bridge-building technique which utilizes to the limit their slight resources for work of this character. Of raw materials they are acquainted with but two, and one of these is really a product of their own ingenuity. They have no nails, no iron, no true wood; they are forced to rely entirely upon bamboo for the structural parts, and upon a rope of their own manufacture to effect the junctures.

The span is almost 150 feet, and the width of the roadway some four feet. The four bamboo columns at either side of the stream are built up of a double length of from fifty to sixty bamboos, tied up with rope and firmly pressed together by forcing a quantity of wedges between rope and bamboos. Such columns are found to be of remarkable strength and elasticity.

The original element which the Javan natives have brought to the construction of these bridges, as remarked, is the rope. This is made of a fibre taken from the native arenpalm, which grows all over the island.

It makes a rope that resists effectively the heavy decaying action of the hot and damp tropical climate with its legions of fungi; in fact, it lasts for many years without any indications of rotting. So between this rope and the bamboo the natives are able to achieve a semi-permanent structure for which it would be hard to find a peer on the ground of cheapness and durability. Perhaps the most surprising feature of the whole thing is the degree to which has been approximated the best type of bridge arch. How does an ignorant savage know that a bridge ought not to be perfectly flat?

Coal Discovered Near Butong, P.I.

The National Coal Company has discovered a vein of anthracite coal near Butong, Mindanao, Philippine Islands, above which the formation is solid, and a shaft will be sunk immediately, with the object of commencing operations on the largest scale possible.

Mr. Dalburg, the mining engineer who is credited with the discovery of this vein, has been exploring the coal fields on the Sibuguey Peninsula for several months and has found immense quantities of coal. In most cases, however, the formation above the coal is too soft and broken to warrant shaft mining, a condition that is generally apparent throughout the coal-bearing Islands.

But at Cebu there is a solid formation above the vein being worked by the company; the new vein in Mindanao is the second on the company properties where shaft mining will be possible. All timber required for the exploitation of this vein is available on the property. The company is constructing a railroad from Malangas, its headquarters, to Butong, a distance of about 11 kilometers.

1919 Holds Fire Record in Manila

More than twenty-one and a half million pesos worth of buildings and other property went up in smoke last year in the city of Manila, 173 conflagrations having occurred within the city limits during that period. The exact amount of the loss was P.21,546,461.

Compared with previous years as far down as 1913, last year's fire statistics hold the record, not only in the value of property lost, but also in the number of fires. In 1918 the fire loss on property in the city was P.13,099,866; in 1917, P7,619,562; in 1916, P.4,526,295; in 1915, P.9,267,207; in 1914, P.8,267,206, and in 1913, P.14,285,113. Much of the property represented by these figures, however, was covered by insurance.

The most recent large fire catastrophe in the city of Manila occurred on the night of February 6, 1920, when the great annual Philippine Carnival was swept away by flames. The loss was estimated officially at P.2,000,000, but many of the exhibits which were destroyed were priceless.

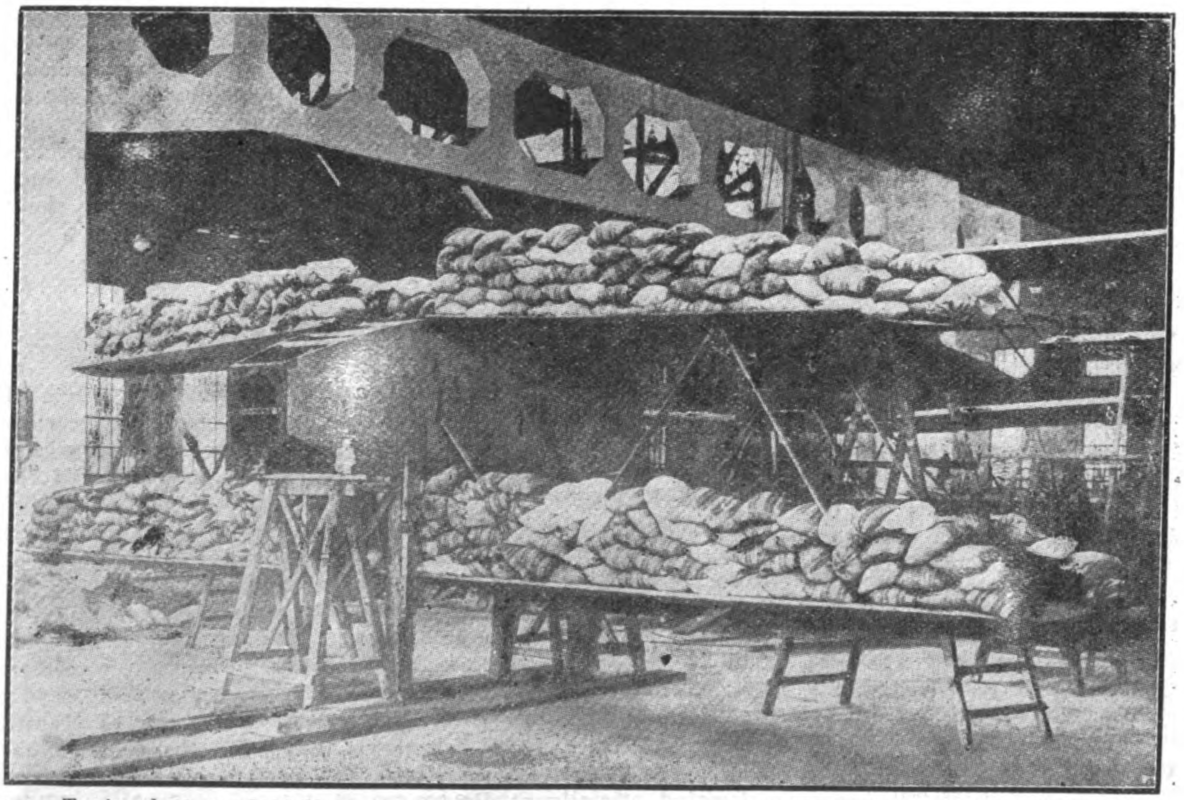
Preparations for Italian Aviators in Shanghai

Elaborate preparations are in progress to greet the Italian aviators when they reach Shanghai. They are expected to remain in the city about 36 hours, during which time they are to be the guests of honor at two banquets, several receptions, an informal dance, and in motor trips around Shanghai. The Department of Aeronautics of the Peking Government is to receive them, members of the Civil and Military, and the Aero Club of Shanghai also officiating. As soon as it is known definitely when they are expected to reach Shanghai Lieutenant Panfill, who is known to the Shanghai public by his recent performances in the air, will start in his S.V.A. machine and escort the visitors to the Kiangwan Race Course where they will land. A reception will be held at the Race Course under the auspices of the International Recreation Club—after which the aviators will come to Shanghai in motors. The Peking Government has offered seven motors for the visitors while they remain in Shanghai. Their first banquet is to be at the Astor House. Seventy local organizations will participate. Covers for 500 persons are being prepared. Admission will be by tickets which may be obtained from March 22nd at the office of the Secretary of the Italian Chamber of Commerce. Besides airmen the guests will include members of the Consular Body, local Chinese officials, members of Shanghai Municipal Council, and others. The Astor House Banquet Hall is to be specially decorated for the occasion. A souvenir will be given to each of the aviators, who will be requested to tell of his experiences. The banquet is to be followed by an informal dance. The next afternoon a performance is to be given at Kiangwan by the International Recreation Club. Tickets for this will sell at one dollar each. At eight the same evening a second banquet will be given at the Bureau of Foreign Affairs. The hosts will be Lieut.-Commander T. S. Chu and Major P. C. Pao, special delegates from Peking. Others to welcome the aviators will be Col. Chu Shih-wen and Mr. Hsia Chin-ching, special deputies of Tuchan Li Shun of Kiangsu; Admiral K. K. Lang, Chief of the Admiralty; Mr. Yang Tcheng, Commissioner of Foreign Affairs; Mr. Wang Ken-ting, Taoyin of Shanghai, the magistrate of the Shanghai city, and General Hsu Kuo-liang, Chief of the Nantao Police. One hundred and fifty guests will be invited including the fliers, the reception committee, officers of the Aero Club, and members of the Consular Body. The last word from the aviators received at Shanghai, said they had arrived in Calcutta. In the original group were seven airplanes, the number has increased now to eleven it is stated.

Guiseppi Brezzi, Engineer and Master of Aeronautics for the Italian Government

Chinese Intentions

The Peking government has appointed Major-General Ting Ching, of the Ministry of War, to be director of the Chinese government aviation establishment at Nanyuan, Peking. For the purpose of facilitating communications, the government intends to build a branch line from Peking to Nanyuan and Peiyuan which will connect with the Peking-Hankow trunk railway shortly. Further, on the recommendation of General Ting, ten of the best students of the Government Aviation School will be selected and despatched to England to study modern aviation tactics under British instructors. It is reported, says the "Peking Leader," that the Chinese Government authorities are not going to make those aeroplanes recently purchased from London as costly toys but they will form the basis for the establishment of a big flying corps for China both for military and commercial purposes and that, if possible, machines will be purchased from other western countries in the future.



Testing the strength of the planes on an Italian aeroplane. Bags of sand approximating the maximum air pressure at the maximum speed are utilized.

Aviation in the East

The South is leading the North of China in aviation, as it has been the pioneer in most advances. Already Mr. C. E. W. Ricou has inaugurated an air service between Macao and Hongkong, which, we understand, is soon to be extended to Canton, and later to Shanghai, Manila and Japan. A large party of trained American aviators are already in Hongkong with a number of machines for the Far Eastern Aerial Service, which Mr. Ricou has pioneered. This company is the distributing agent of the Curtiss planes. China's first connection by air with foreign countries will doubtless be through the Italian aviators, who are now on their way in the Rome to Tokyo flight. The Chinese Government expects to make their arrival in China a memorable event to stimulate national interest in aeronautics. The Government has already bought a number of Handley-Page machines, and has contracted for a large number of Vickers Vimy planes.

Manila and Chinese Aviation Students

Major J. E. Hamilton Stevenot, Far Eastern Manager of the Curtiss Company, in speaking of the possibilities of the Philippine Aero-Club co-operating with The Aero-Club of Shanghai said that students from Shanghai could be trained in the Curtiss School at Manila. Applications have been received for the matriculation of Chinese government students in the Curtiss school. The school could also take care of students from the aerial club at Shanghai. There are many former army aviators at Shanghai and in other China cities, whose interest in flying will be kept alive by a permanent club organization.

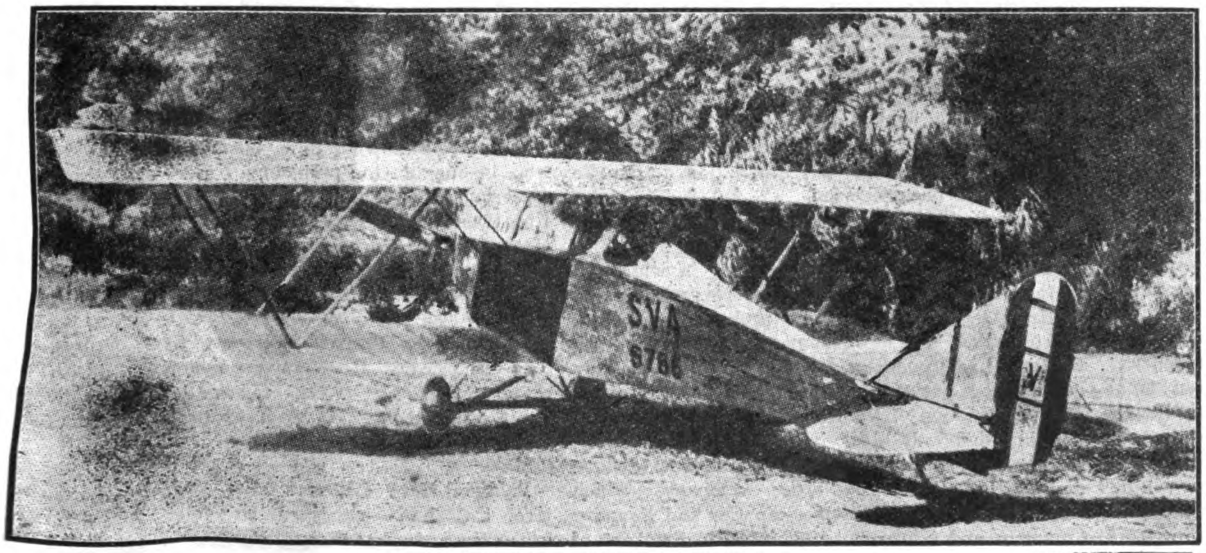
The Inventors of the Italian plane. Sig. Sanoja and Sig. Verduzio.

Tokyo-Seoul Flight

The Japanese military authorities carried out a flight from Tokyo to Seoul, Korea, and return about the middle of March. The flight is the longest so far attempted in Japan. Three planes took part in the flight. The Japanese newspaper, "Jiji," urges Japanese aviators to undertake flights to compare with the great ones done by European aviators, and suggests they ought to fly from Japan to Peking, or to the Yangtze, or South China and the Straits Settlements. "It is incumbent on the Japanese aviators to attempt these flights," it says.

Aeroplane Acrobatics at Peking

Peking has been interested in the performance of the first of two Avros ordered by the Chinese Government from the Handley-Page Company inasmuch as it is the first time that anything but straight flying has been witnessed in the capital. Captain Mackenzie had the machines up on two successive days. On the first occasion he merely tried the wires though over Peking he did a stalled turn, but on the second ascent he looped the loop, nose dived, side-slipped, spiralled, etc. This type of machine is to be employed in the training of Chinese aviators, a commencement with which work will be made this month.



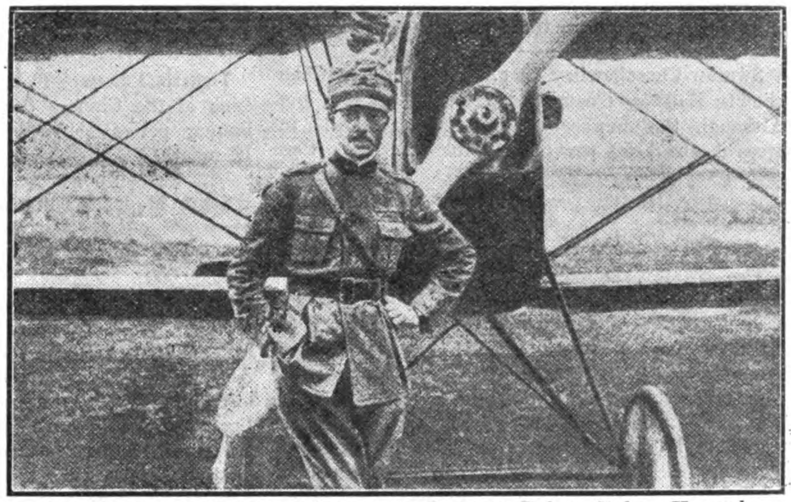
The S.V.A. Ready for Flight.

Hongkong-Macao Service

Eleven of the Curtiss machines of the largest type for the South China aerial service are already on their way, having left New York by the steamer *Dacre Castle* on January 20 and are expected to arrive at Hongkong towards the end of April. The machines were constructed for the U. S. Navy and are equipped with Liberty motors. They have been re-modelled for carrying passengers and each plane is capable of making a continuous flight of 650 miles and carrying 14 passengers. It is still uncertain where the headquarters of the new organization will be, but it is expected that some selection will be made either at Hongkong, Canton or Macao. The first route will be mapped out from these cities and extended later to Shanghai and finally to Manila and Japan. An aerial service under the auspices of Mr. Ricau between Hongkong and Macao was inaugurated on March 17 when, as already announced, the distance was covered by seaplane in twenty-three minutes. A regular connection between these cities and Canton will be maintained in the future.

Siam Aeronautics

Appearing in the Siam Government Gazette of February 15, 1920, are two Royal Decrees issued under date of February 9, 1920. The one states that His Majesty the King, on February 2, ratified the International Convention concerning the Regulation of Aerial Navigation signed at Paris, October 13, 1919,



Sig. Tenenti, one of the pilots on the Rome to Tokyo flight. He took part in the raid on Friedrichshaflen.

and that the Royal Ratification is on the way to Paris, according to the final provision of the Convention to be placed in the archives of the French Government. The other Decree invests the Ministry of War, in which the Department of Military Aeronautics is already included, with the entire direction of all matters concerning Aerial Navigation.

Trans-Pacific Air Flight to Hongkong

The "Times" (London) New York correspondent telegraphs that it is stated that the United States Navy is constructing two giant seaplanes with which a flight will be attempted from San Francisco to Hongkong viâ Honolulu, Wake Island, Guam and Manila. It is reported that the new giant Vickers aeroplanes will challenge the American machines for a Trans-Pacific flight.

Engineering, Financial, Industrial and Commercial News

RAILWAYS

Tube for Tokyo.—It has already been reported that an underground railway scheme is proposed in Tokyo and it is now stated that official permission has been granted and the promoters are putting their ideas into form. As a first step towards the completion of the scheme, an underground line will be constructed from the Shinagawa terminus of the Keihin (Tokyo-Yokohama) Electric Line to Kaminarimon, an entrance to Asakusa Park, with a branch line, separating from the main line at Kurumasaka, Shitaya, to connect with the surface lines at Minami-Senju. It may be noted that the company is capitalised at Y.40,000,000 and is named the Tokyo Chika Tetsudo Kabushiki Kaisha. The Company was promoted by Mr. Hayakawa Tokuji and others.

Siam Extension.—Siamese State Railways are to be extended from Koorat to Ubon passing through Buriram, Suriu, and Sisatlet. A survey is now being made of the new line.

Swatow-Chaochowfu Line.—The Swatow-Chaochowfu Railway (26 miles long) operated at a loss. Although the number of passengers carried increased about 30 per cent., the receipts were considerably below those of 1917. This was due principally to the necessity of carrying soldiers free of charge. Freight receipts, always unimportant, were much the same as in previous years.

The Swatow-Changlin Light Railway, a push-car line for carrying passengers, extended its track as far as Chenghai, a distance of 10 miles from Swatow. It is reported that the company plans to double-track the line as soon as profits permit, when it will also be used to carry light freight. The company erected during the year a one-wire telephone line along the railway for its own use. It is reported that another light railway line will be constructed between Chaoyang and the landing place of the Swatow launches.

Chinchow-Jehol Project.—A Chinese news agency states that the Government has decided to construct a railway from Chinchow to Jehol in connection with the construction of Hulutao port, and that Chow Chou-hsiang will be director both of the railway and of the port.

Japan Takes Advantage of Railway Situation.—The "Peking Leader" says: The proposed scheme for the construction of the Hei-Ping Railway (North Manchuria) was formerly floated by Russian capitalists and the Russo-Asiatic Bank undertook to provide China with the required funds. On account of the recent revolution in Rusisa, the Russian authorities found it impossible to render service to China. Accordingly, the Japanese financiers were approached by the Representative of the Russo-Asiatic Bank in Peking, with a view of extending to China in equal shares the necessary capital for starting the construction work of the line in question. Owing to certain political questions, which prevented the Government from negotiating with the representative of the Russo-Asiatic Bank, the proposal thus advanced by the Russian authorities was not accepted. Meanwhile, the Japanese capitalists are quite willing to take advantage of the situation, and are prepared to finance China single-handedly in this special instance.

Increase of Railway Transport Capacity.—Aside from the construction of about 1,000 freight cars to be transferred from the current financial year, the Japanese Imperial Government Railways expects to build about 1,600 new freight cars of a 10-ton capacity. Besides, many small freight cars are to be reassembled. The result will be that in the next financial year, the Railway Board will have its transport capacity increased by about 30,000 tons in all.

Japanese Railway Receipts.—The latest official returns of the Government railways show the amount of passenger receipts for the ten months from April 1, 1919 to January 31 this year to have amounted to Y.130,154,808 and the freight receipts to Y.107,761,474, making a grand total of Y.237,916,362. This is a gain of Y.50,872,390, the gain in passenger receipts being Y.31,780,061 and in freight receipts Y.19,093,329 over the corresponding period of last year. The receipts for January 1920 totalled Y.23,804,488, an increase of Y.5,749,951 over that of January 1919.

Tientsin-Pukow Tickets.—The Tientsin-Pukow Line of the Chinese Government Railways is now issuing periodical tickets of one, three, six and 12 months.

South Manchuria Railway Company.—The South Manchuria Railway Company has decided to increase its capital from Yen 200,000,000 to Yen 240,000,000.

American Locomotive Export Combine.—Two big equipment manufacturing companies, the American and the Baldwin Locomotive companies, have formed an organization to be known as the Locomotive Export Association under the provisions of the Webb-Pomerene act to handle some of the foreign business of those companies. The organization was formed primarily to take care of the order for 150 locomotives for the Belgian Government, which has been divided between them. That order originally went to the American Locomotive Company, but because of the necessity for early delivery it became necessary to divide the order with the Baldwin company. In order to work in conjunction on a foreign order, the companies were compelled under the Webb-Pomerene act to form the association. None of its officers has been elected, its management being vested in two representatives of each company. Although no definite plans for the new organization have been worked out in detail, it is considered probable that the two equipment manufacturers will continue the association to handle other foreign business soon.

Although there is now no connection between the formation of the association and the long talked of equipment export combination, in which all of the important equipment producers planned to participate, it is considered probable in some quarters that the new company formed by the Baldwin and American Locomotive interests may become the nucleus for the greater organization. In the formation of the new concern the companies had in mind only their immediate needs respecting the Belgian orders, it was stated, but the long discussed plans for the larger company, which would include also the American Car and Foundry Company and others, may, it is said, grow out of the new organization.

Living Buddha Supports Kalgan-Kiakhta Railway Scheme.—The Living Buddha of Urga has despatched a telegram to the Peking Government stating that the project which the Government has formulated for the construction of the Kalgan-Kiakhta Railway has met with the hearty support of the different princes in Outer Mongolia, who fully realise the importance of such a scheme, as the construction of the new line will remove much of the transportation difficulties that now exist in Mongolia. Large sums are being subscribed by the princes of the different Leagues in Outer Mongolia as capital for the construction of the line, and the Living Buddha himself will undertake to raise one-tenth of the whole amount of the funds required for construction.

New Locomotives for Japan Railways.—Twelve new locomotives capable of hauling a train of 13 cars as compared with 9 by present locomotives, were to have been put on the Tokaido line during March, and others are scheduled to be in operation on the line from Tokyo to Shimonoseki before the summer.

Pukow-Sinyang Railway.—The question of resuming the work of the construction of the Pukow-Sinyang Railway has been taken up at Peking, and Mr. Hsu Shih-tsang, Director General of the Tientsin-Pukow Railway, has been appointed concurrently Director General of the new line. When the war broke out, the earthwork of this railway was well advanced, but had to be stopped owing to financial stringency.

Projected Railway in Korea.—A big railway company called the Hokusen Tanko Tetsudo Kabushiki Kaisha is in course of organization in North Korea. The promoters, the "Seoul Press" reports, include Mr. S. Asano, well-known Tokyo business man, and a number of other leading men in Tokyo, and under date of February 25, they filed an application with the Government-General for permission to establish it. The company will be capitalised at Y.20,000,000 and aims at working the rich coal fields in North Korea. When the company is in working order, the promoters hope to lay a light railway of broad gauge, between Lajin and Hunyu, North Hamkyong Province 83 miles in length, with a view to undertaking transportation of passengers and goods on the frontier and around Chientao, besides its main object It is the intention of the promoters to run the company without asking any subsidy from the Government-General. Mr. Asoh, a well-known mining business man of Seoul, who is one of the promoters, and several engineering experts of Tokyo will shortly visit North Korea on business connected with the surveying of the route. The capital of the company, 400,000 shares, will be entirely subscribed by promoters and supporters of the plan

American Locomotive Company Gets Orders.—The American Locomotive Company recently closed orders for seven consolidation locomotives for the Shantung Railway, China; and four for the Imperial Taiwan Railways, Japan.

Baldwin Gets Chinese Order.—Baldwin Locomotive Co. has received an order for twelve locomotives from China, eight to be consolidated and four Pacific type engine.

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Building Engineering

Contractors for reinforced concrete structures.
Designers and suppliers for reinforcement for concrete structures.

Textile Manufacturing Engineering

Cotton Spinning Machinery.
Looms and Weaving Machinery.
Knitting Machinery.

Power Engineering

Complete central stations for lighting and power; power plants for mills, factories, and shops, pumping plants, and compressor plants.

Turbo generators
Engine-driven generator sets
Condensing plants and pumps
Steam fuel economizers and forced draft fans
Steam engines, boilers and parts
Stokers, feed-water heaters and purifiers
Air washers and spray cooling systems
Hydraulic turbines and water wheels
Evaporators, oil extractors and purifiers
Valves, pipe and fittings

Electrical Supplies

Motors, generators, transformers and controlling apparatus
Storage batteries and dry cells
Bare and insulated wire and cable
Telephones, switchboards, bells and accessories
Meters, instruments, line hardware and tools
X-Ray and medical equipment
Lamps, fans, wiring devices, fixtures and glassware
Domestic appliances for heating, cooking, etc.
Electric commercial and pleasure vehicles

Mechanical Supplies

Machine shop equipment
Mechanical transmission equipment
Pumps, meters, instruments and gauges
Stationary and marine oil engines
Pipe and pipe fittings
Belting, packing and asbestos mechanical goods
Flour, rice and oil mill machinery
Compressors and drilling equipments; blasting materials
Surveying, drafting and assaying instruments and supplies
Scales, vaults, tractors, trucks and road-making materials

Railway Supplies

Locomotives
Freight and Passenger Cars
Bridges and Turntables
Rails, Couplers, Crossings and Switches
Railway Specialties and Stores

Building Supplies

Roofing, glass and hardware
Sherwin-Williams paints and varnishes
Red and white lead
Concrete reinforcing bars and triangle mesh
Plumbing, heating and wiring devices

GENERAL IMPORTERS AND EXPORTERS

Foochow Roads Extending Slowly.—Only 2 miles of roadway were constructed in and near Foochow city during the year, making a total of 30 miles built in the last three years under the direct supervision of the provincial government. About 2,000 jinriksha, 30 carriages, and 15 motor cars are now being operated on these modern roads. A large motor bus does a thriving business carrying passengers back and forth. These roads and the motor bus have become so popular that the provincial government is planning to build similar roads to Yenping, a distance of about 120 miles. At present, the only roads from Foochow are the ancient narrow stone affairs, badly in need of repairs. The building of modern roads throughout the district would be of immense benefit to the people. The total amount expended up to October, 1918, for roads was $318,000.

Amoy-Changchow Line.—The railway from Sungsu, on the mainland opposite Amoy, says a report by American Consul C. E. Gauss, runs only 17 miles in the direction of Changchow, maintaining the present railhead at Pohlam bridge. No work toward extending the line to Changchow has been done during the year. The line carries passenger traffic almost entirely, and is run at a loss by the ministry of communications. The roadbed and rolling stock are in poor condition.

While there have been many plans for roads, some with motor-bus services, and for narrow-gauge railways, discussed for this district, nothing definite has appeared, except that some roads have been constructed in the city of Changchow and a project to construct a road from Changchow to Shihma, the head of launch traffic from Amoy, is under way, although actual construction work has not begun.

It is to be hoped that some means will soon be found of opening up transport facilities with Lungyenchow—the hard-coal fields in the interior. While quantities of anthracite, which has produced splendid assays, find their way to Amoy in small boats, through the rapids and with transhipment, the quantity is not sufficiently large to give the port any standing as an anthracite coal depot.

Launch service continues to be practically the only means of communication with inland and near-by water points, from which the traveler must proceed by small boat, by chair, or on foot. The launch service was interrupted during part of the year by military operations, but is now about normal.

Tokyo Tramways.—Plans have been made to spend Yen 1,200,000 on the reconstruction of Tokyo car lines.

Siaosing-Siaoshan Railway.—Mr. Jen Yu-shan, director of the Shanghai-Hangchow-Ningpo Railway, has decided to survey a branch line between Siaoshan and Siaosing, crossing the Chientangkiang with a steamer for the present if the line is built. The survey is expected to be completed in two months.

ROADS

Japanese Road Construction.—A great scheme of road making and improvement is being planned for Tokio, Yokohama, Kioto, Kobe, and Osaka. The expenditure for Tokio alone, extending over a period of 10 years, is estimated at Y.38,000,000, and the total estimated cost reaches an enormous figure. The undertakings will be supported by Government subsidies, one-third of the cost being provided in this way The first part of the scheme to be undertaken will be the construction of new roads in Tokio and a great highway connecting the capital with Yokohama.

Yunnanfu to Nanning.—With the object of building a highway for a motor vehicles between Yunnanfu and Nanning, a company has been organized with a capital of $5,000,000, $1,000,000 of which is to be contributed by the provincial governments and the balance by the general public.

Road Extension Work in Shanghai.—A great deal of useful road widening and extension work has been carried out in Shanghai during 1919. The most noticeable perhaps being that of Bubbling Well Road and Yuyuen Road, forming as they do the main approach to Jessfield Park. The ever increasing traffic has brought out a fair amount of public criticism as to the inadequacy of the roads, particularly in the Central District. It is apparent to most residents that a great deal of widening is necessary. But while road widening and very costly widening is necessary, it by no means goes to the root of the trouble, viz: the absence of a good arterial road system on a scale broad enough for present and future requirements. A most necessary trunk road would lead from east to west without touching any part of the Central District: unfortunately this would involve the acquisition of land outside the Council's administrative area. The parking facilities about to be provided on the Bund should also improve conditions now obtaining in the narrow roads between the Bund and Szechuen Road. The rapid development of Shanghai: the very small areas in which land is held: the high values of land; and the number of Local Authorities and their diverse interests, all tend to complicate the road question and also the rational development of great Shanghai.

Tientsin-Peking Road.—Construction work is to be commenced upon the road from Tientsin to Peking as soon as the frost disappears, and it is expected that the work will be completed before October. The road has been surveyed and money has been raised for the initial expenditure of getting the road into shape.

SHIPBUILDING

Shipbuilding in Japan for 1920.—Notwithstanding the prevailing depression in shipping circles since the restoration of peace, the shipbuilding industry in Japan has been and is being carried on so prosperously that no shipyard can hardly receive any new orders. The reason for the boom is attributed to the fact that many new orders have since been placed by shipowners on the prospect of a fall in building material after the war. Under the circumstances, it is generally anticipated that the tonnage to be constructed in Japanese shipyards in the course of current year will reach 700,000 tons, should the material be supplied as expected. At present, the material is mostly being imported from America, part being met by domestic production. Recent strike in America by coal miners and employees of iron foundries, coupled with the steady increase in domestic demand, however, have naturally caused some delay in the shipment of goods for export and it is feared that this fact might affect the shipbuilding industry in Japan. To make the matter worse, the big iron foundry at Yawata is reported not to be in good working order, some machinery used for the manufacture of shipbuilding material being in a damaged condition. There are more facts unfavorable for the progress of the industry.

New Ships.—The ocean-going steamers built in Japan from October 1918 to October 1919 number 777 (3,759,888 tons gross) in iron vessels and 410 (768,542 tons gross) in wooden vessels.

New Steamer for Yangtze Rapids.—The Ichang-Chungking str. *Loong Mow,* built to the order of Messrs. Mackenzie & Co., Ltd., Shanghai, was launched on March 2 at Kiangnan Dockyard. The dimensions and power of the vessel are slightly greater than the other vessels engaged on this run, says "Shipping and Engineering," and it is expected she will be faster and more commodious than the best of the several steamers navigating the rapids of the Upper Yangtze. Watertight subdivision of the hull has been specially considered to safeguard as far as possible any danger of sinking in the event of the hull being holed. As a further precaution the vessel has been built to comply with the Rules and Regulations of the British Corporation for the Survey and Registry of Shipping and has been built under special survey. The vessel is fitted with twin propellers driven by triple-expansion engines supplied with steam from Messrs. Thornycroft's latest type of water-tube boilers, and has steam steering gear actuating three rudders. Accommodation is provided for a limited number of foreign and Chinese passengers.

Steamers Sold in Japan.—A contract has been signed between the Asano Shipbuilding Company and an American merchant for the sale of four vessels of 8,600 tons each now on the stocks in the Company's yard at the rate of $160 per ton. The Company is negotiating with other buyers regarding the sale of four other vessels at a higher rate on terms of July-August-September delivery.

N. Y. K. Launches Freighter.—On March 3 the new Japanese freighter *Lyons Maru* was launched at Yokohama, by Baron Kondo, president of the Nippon Yusen Kaisha. Speeches were delivered by Baron Kondo, Mr. Sakamoto, Admiral Shimamura and Mayor Kubota. The *Lyons Maru* is said to be one of the finest boats of her type ever launched. She is 10,000 tons deadweight, 58 feet beam, 34 feet moulded depth, and her contract speed is 14 knots. Her engines can develop 5,000 horsepower. She is the largest ship yet built by the Yokohama Dock Company and the first of what are known as the L type freighters. It has not been definitely decided by the company, but the *Lyons Maru* will probably be placed on the European run.

Str. "Silesia."—Str. *Silesia,* one of the three Austrian vessels detained by the Chinese Government last year as a result of the war, is reported to have been sequestrated by the Italian Government. The Vice-Minister of Foreign Affairs, to whom the question was brought by Minister Wang in Rome, has instructed the latter to approach the Italian Government, demanding for a satisfactory explanation concerning the retention of the vessel. In the absence of a satisfactory explanation on the part of the Italian Government, the Chinese Minister in Rome is instructed to lodge with the Italian Government a vigorous protest in the name of the Chinese Government. The Minister is further ordered to bring the case to the notice of the Peace Treaty, should the situation justify.

INDUSTRIAL

Another Flour Mill for Shanghai.—The Manchurian Flour Milling Company intends erecting another mill at Shanghai in view of the plentiful supply of wheat along the river Yangtze. This new project is, however, not to be managed by the company itself, but will be placed in hands of a new joint stock company capitalized at Y.3,000,000, called the Shanghai Flour Mill Company. The Manchurian Flour Milling Company will own the best part of the shares in the new company and sell only 5,000 in the market.

WELL established and widely connected banking correspondents in all the market centers of the Far East provide for Irving customers reliable and responsive sources of information and service facilities for carrying out banking and commercial operations in every country of the Orient.

IRVING
NATIONAL BANK
WOOLWORTH BUILDING, NEW YORK, U.S.A

Commercial Bank
National and Inter-National

Tsingtao Cotton Mill.—The International Cotton Trading Company will enlarge its cotton mill at Tsingtao. The required funds will be raised by the issue of new shares to the value Y.10,000,000,000.

Cotton Mill at Wuchang.—A large cotton mill was opened at Wuchang on February 25. It is owned by a native merchant in Hankow and has a substantial capital. Three hundred hands have been taken from Shanghai.

New Reeling Companies in Japan.—In order to prepare for the possible reaction after the present good turn in export trade, projects are being made by Japanese silk reelers to convert their private filatures into joint stock companies. The Maruman Filature at Osaka has already been converted into the Maruman Silk Reeling Company capitalized at 3 million yen. The Shinsankan Filature in Nagano Prefecture and its branch office at Nagoya are also being converted into a joint stock company capitalized at Y.3,000,000. The capital of the new concern is divided into 60,000 shares, of which 53,000 shares are to be allotted to promoters and the rest to be offered to the public for subscription at a premium.

Japanese Company Promotion.—According to returns published by the Mitsui Bank, the capital invested during January for the promotion of new companies and the extension of old concerns amounted in all to Y.1,006,331,000. Of this sum, Y.423,790,000 represented the establishment of new companies and Y.639,528,000 the extension of old ones. Compared with the preceding month, the former shows a gain of Y.143,000,000 and the latter a gain of Y.377,973,000, making a total increase of Y.520,970,000. Compared with the same month of last year, called the capital into use for the promotion of new companies shows a gain of Y.286,130,000 and that invested for the extension of old concerns a gain of Y.587,930,000, totalling Y.874,068,000. This remarkable increase in the amount of capital called into use for the extension of old companies was due chiefly to the raising of capital effected by many banks.

New Cotton Mills.—The Dai Nippon Spinning Company has decided to erect another cotton mill in China following the completion of the mills the company is now building at Tsingtao and Shanghai. The new additional mill will be built at Tientsin, and will employ from 20,000 to 30,000 spindles.

Dye Works at Hankow.—A big dye works is shortly to be opened by Cantonese in Hankow. Twenty-four machines have been brought up from Shanghai and it is stated that the concern will be opened for business early in April.

Match Industry in China.—The export of matches from Sweden is likely to cease, while America is barely producing enough for home consumption. The only dangerous competitor will be China when the matches industry is fully developed. There are at present 34 factories in China with a yearly output of 150,000 tons. Of the 34 nine are operated by Japanese, with a total output of only 80,000 tons. Ever since the boycott the industry has been making rapid strides and exports of Chinese matches to the south seas is only a question of time. With the following advantages, the match industry in China should become one of the most important industries in the country: (1) China is a great market for goods; (2) the country is rich in raw material; (3) wages are lower compared with Japan; (4) land is cheap; (5) match industry is a simple business with quick returns.

Would-be Socialist Venture.—The Dai Nippon Jinzo Hiryo Kaisha or the Japan Fertiliser Company proposes that the present capital of Y.14,300,000 should be increased to Y.30,000,000. It is also proposed that 314,000 new shares should be issued for the purpose of which 286,000 shares should be distributed among the present shareholders in the proportion of one new share for each old one and the rest among the employees of the company as "good service" shares.

The Anshan Steel Works.—In a report in the "Board of Trade Journal" H.M. Consul at Dairen states:—The unsatisfactory state of affairs at the Anshan Steel Works, the property of the South Manchuria Railway Company, is borne out in an article which appeared recently in a local non-official organ. The writer indicates that the company have practically decided to abandon the erection of the steel manufacturing plant, and to restrict their energies to the production of pig-iron. The termination of the war and the consequent sudden drop in the price of iron and steel is probably responsible for the change of plans. Given a further two years in which to stabilize its position, it is quite conceivable that, with the inflated prices which prevailed during the war, the works would have proved a financial success, notwithstanding the great expenditure of money on the undertaking. But as matters stand at present, the receipts from the works will certainly fall far short of the estimate for the current financial year, viz., £2,170,700 (approximate).

The article states that the first part of the programme, as is generally known, has been duly completed, but construction work on the second part of the programme is to be suspended, and it is probable that radical changes will be made in the original scheme. If the latter were to be carried out in its entirety an enormous outlay would still be required, but the present financial condition of the company renders this impossible. Moreover, it has to be remembered that the company would have to face the opposition of the iron works in Japan. It would seem, therefore, that the original plan of producing all kinds of iron and steel goods at Anshan is now considered unsound. A big reduction must therefore be made in the equipment originally contemplated, and future activities will be confined to ore extraction and the manufacture of pig-iron.

A Sane Program for the Promotion of Industry.—Mr. Yeh Kung-tso, High Commissioner of Industry to the Government of China, has a scheme for the promotion of industry which is logical, practicable, and begins in the right place. In order to arouse interest in industrial enterprises he proposes the organization of lecturing groups. His program is arranged as follows: (1) The Agricultural Guilds and Chambers of Commerce in the various localities shall be entrusted with the organization of these groups and the lecturing materials shall be supplied by the Industrial Bureaux; (2) The Industrial Bureaux shall compile books in the "pai hua" or spoken language dealing with the climate, products, methods to make improvments, etc. to be distributed and used as lecturing materials by the commercial and agricultural institutions; and (3) along the coastal regions or railways where there are no agricultural guilds or chambers of commerce lecturing groups may be organized by the Industrial Bureaux and sent to such places.

Chinese Brewery.—Dr. Wu and Mr. Lin Chu-san, representatives of the Chinese Brewery Company of Kiangsu Province, are in America at present with the object of purchasing machinery for brewing beer. The brewery will be established at Wuhsi, and the promoters hope to have beer on the Shanghai market by next spring at the latest. The company expects to spend about G.$200,000 on the plant.

New Japanese Companies Established.—Investigations by the Department of Agriculture and Commerce show that the number of companies newly established in Japan during the past five years was 28,016 with an aggregate capital of Yen 4,462,871,517. Particulars according to different years are as follows:—

	Number of new companies	Capital Yen
1915	 4,003	128,077,940
1916	 3,935	236,600,002
1917	 5,156	1,007,335,320
1918	 7,972	1,798,823,239
1919	 6,950	1,298,823,239

Below are the details classified according to different kinds of enterprises undertaken:—

	Number of companies	Capital Yen
Commercial	...10,373	1,270,782,256
Industrial	...10,952	1,870,897,079
Mining ...	... 435	470,496,970
Agricultural	... 636	63,712,264
Forestry	... 333	51,912,736
Fishery ...	... 159	28,227,695
Transportation	1,548	360,375,507
Miscellaneous	... 3,580	316,467,010
Total	...28,016	4,462,871,517

Beer and Boycott.—With negotiations for a deal involving several million dollars pending between William Wu of Shanghai and Rudolph Samet, president of the State Brewers Association, for the purchase of brewing machinery, it became known on January 20 that the Chinese intend to enter the brewing business and boycott Japanese beer, says the "San Francisco Chronicle." "Practically all the beer consumed in China is the Asahi beer, made in Japan, and Tsingtao beer, made by the Japanese in the sphere of influence they took from the Germans during the war. Loyal Chinese have boycotted all things Japanese and intend to carry the boycott to beer. The only Chinese brewery now in operation is in Peking, and not large enough to supply the demand for Chinese beer. Because of the poor water at Shanghai it is the promoters' intention to establish the breweries in small towns nearby, where the water supply is good. If the mammoth deal for brewing machinery is consummated famous California brew-masters will go to China in charge of the manufacture and handling of the beer.

Knitting Mills in China.—The manufacture of underwear and hosiery is a growing industry in China. Canton, Shanghai, Hankow, Swatow, Chungking, Peking, Tientsin, Harbin, and other cities are producing these articles in factories that are mostly small and poorly supplied with machinery. The Pioneer Knitting Mill in Shanghai is a modern establishment equipped to knit both cotton and silk hosiery. When all the American machinery ordered has been received, this will be the largest hosiery mill in China, with a daily output of 1,000 dozen. Its products are not only sold locally but exported to other parts of the Far East. The Li Kiang Knitting Factory in Swatow, using machinery operated by steam, had an output of 54,000 dozen pairs of socks in 1917. The manufacture of ribbed underwear in Swatow has materially reduced the sale of cheaper goods imported from Great Britain and Japan. It should be noted, however, that Chinese industries are at the very beginning of their development along modern lines, and the vast population of the Republic must continue for many years to depend chiefly upon many lines of foreign manufacture. The net imports of hosiery in 1918 were received mostly at the following ports (value in Haikwan taels):

FOR SALE

Plate and Shape Spacing Table With Multiple Punch

Bought for use by an American shipbuilding company under the following specifications and never used. Have never been removed from their original packing:—

SPECIFICATIONS

Plate and Shape Spacing Table with Multiple Punch suitable for punching medium steel plates up to 30" wide, angles up to 8" x 6", and beams and channels 6" to 15" for both webb and flange punching on material 54' long.

Spacing Table, hand operated. Frame of steel construction about 60' long on each side of punch to allow unobstructed access for operating and setting.

Cast-iron carrying rolls, designed to properly support the specified class of material, located every 5' for plates and every 10' for angles, I-beams and channels. Angles and channels for flange punching, punched in pairs, back to back; I-beams punched singly. The rollers vertically adjustable in relation to the dies on the punch for punching the flanges, beams or channels 6' to 15', as specified above. Adjustment obtained by means of screws and worms interconnected by a shaft operated by spider or handwheel located near punch within easy reach of the operator.

Roller frames supported on springs to permit of carrying material through punch free and unobstructed from dies. Rack is of steel cut from the solid and made in sections. Spacing carriages hand operated by means of handwheels and releases lever. Frame all steel and fitted with hardened steel roller bearings.

The desired spacing is obtained automatically, and at the stopping point the carriage is effectively locked against forward or backward movement until released by operator. Spacing carriage clamp is of steel designed to grip plates and angles singly and in pairs for flange punching, and I-beams singly for both web and flange punching, all without change of adjustment. Trailer table equipped for guiding plates through the punch while punching.

Length required for table and punch about 128'.

Punch has capacity to punch simultaneously two 1$\frac{1}{16}$" diam. holes through one-inch medium steel. Machine heavily built of A frame double housing type 30" clear between housings. Operated by not less than 35 strokes per minute and especially designed to operate in connection with the spacing table above described, and for punching the size and class of material specified. All gears are covered.

Space occupied by punch, 3' 6" x 10'. Machine heavily built and amply strong. Operated by foot treadle which may be locked in position when desired to run machine continuously.

Weight, Punch and Table complete, without electrical equipment, approximately 55,000-lbs. Is furnished with eight punching units with minimum adjustment center to center of not more than 2¼"; two controller levers across face of machine for controlling any combination of gags from the operating side; one set of toggles for gauging clamps for guiding angles of I-beams, and channels for punching flanges.

Housings or uprights of steel, gags, cast steel cut from the solid. Shafts, open hearth steel. Bearing of ample size and bronze bushed. All running parts scraped to perfect bearing and provided with grooves for proper distribution of lubricants. Clutch jaws, or wearing surfaces, on moving clutch and gear, of tempered steel which permits of easy removal when worn. Clutch disengages automatically at each stroke. Adjustable automatic stop at any desired point in the down stroke. Strippers of suitable kind provided for punching specified kind of material.

Foundation plans giving accurately the spacing anchor bolts, together with all necessary information as will permit laying of foundation will be furnished prior to delivery. All necessary instructions for erection and operation will be furnished with machine upon delivery.

TESTED to punch simultaneously not less than 35 1$\frac{1}{16}$" diam. pairs of holes in one-inch medium steel plate on consecutive strokes in one minute, with a clearance between punch and die $\frac{1}{16}$".

Cost—$37,000.

Thomas Multiple Punch and Spacing Table

Thomas Multiple Punch and Spacing Table capable of handling plates 9' wide by 40' long.

SPECIFICATIONS

Ram pressure, 1,600,000 pounds. This pressure is capable of shearing 32 sq. inches of metal flat at each stroke of the punch.

Distance clear between housings, 9' 2", stroke 3".

Number of strokes per minute, 18.

Diameter of Shaft. 12".

Gear Ratio, 15 to 1.

Weight Multiple Punch, 140,000-lbs.

Weight of Spacing Table, 40,000-lbs.

Double housing central ram type.

Punches fitted with two separate sets of punching tools in order to permit the punching of lines of holes across the plate, which are not in line with each other.

Punching tools:

Machine fitted with 48 sets of separately adjustable punching tools, adjustable down to 2¼" and controlled by eight levers, 4 levers for each row of punching tools. Spindles may be of unequal lengths in order to reduce the shearing effect and relieve the strain on the machine. For punching rows of holes across the plate where the thickness would exceed the capacity of the punch the holes may be punched by two strokes of the punch, leaving the pacing carriage stationary. The spacing table is automatic and requires no attention from the operator except the manipulation of hand levers for controlling gags for operating. All gears are covered. Cost, $13,500.

MERCHANT SHIPBUILDING CORPORATION

Harriman, Pennsylvania, U.S.A.

Hankow, 270,060; Shanghai, 248,636; Dairen, 160,283); Canton, 149,665; Swatow, 148,373; Wuchow, 111,546; Antung, 105,644; Tientsin, 98,446. Exports of cotton hosiery from the United States to China during the fiscal year ended June 30, 1918, were valued at $16,643.

Foochow Industries.—The principal native industries of Foochow, says a U. S. Consular Report, are the manufacture of lacquerware, horn combs, umbrellas, carved woodwork, native cotton cloth, soaps, paper, tin foil, condensed milk, glassware, and towels; the production of salt, sugar, dressed lumber, and knock-down wooden boxes. The one local brick factory using machinery was forced to shut down during 1918 on account of losses amounting to about $25,000. The bricks manufactured were not popular, and despite their high price were not as good as native handmade bricks. The Chinese owners are now planning to sell this factory.

There are several small glass factories at Foochow for making lamp chimneys. Iron moulds, not machinery, are employed. The glass is produced in clay retorts, ranging in capacity from 70 to 340 pounds and in cost from $7 to $18 Mexican ($5.44 to $13.98 gold) per retort. As the war shut off foreign lamp chimneys from this market, the native-made article has been in much demand. The aggregate business done by these firms during 1918 was about $30,000 United States currency.

Paper is manufactured in north Fukien in many places in the upper Min River districts, principally near Yenping. It is made from bamboo fiber and consists of three kinds. The first is pure white and its value at Foochow in 1918 totalled $700,000. It is chiefly used in the manufacture of account books. The second, brown in color and poorer in quality, is used chiefly as wall and wrapping paper. It is reported that the total production of this paper in 1918 was between $340,000 and $388,400 in value. The third is used as joss paper and is shipped almost entirely to northern coast ports. Its annual production is valued at $388,400. Paper shipments hus aggregated more than $1,400,000.

AVIATION

Air-Craft Station at Singapore.—The Aero Club of Malaya has under consideration the establishment of a great air-craft station at Singapore.

Chinese Students for England.—The Aviation Department is to send 6 students to England to study the manufacture of aeroplanes at Vicker's factory.

Aviators to go for Dutch Prize.—According to the "Times" (London), Lieutenants Backer and Palther, who have entered to fly from Amsterdam to Java for the Dutch Government's prize, state that they have chosen the route viâ Brest, Marseilles and Naples, not calling at Pisa, or Rome. Egypt will not be visited as the airmen will fly to Basra direct from Cyprus. Moreover they propose to follow the coastal route throughout, flying round the whole length of the Indian coast. They have decided to use a Vickers flying boat with Rolls-Royce engines. The time allowed for the flight is 30 days. The airmen have divided the journey into 26 stages, the average distance apart being 400 miles.

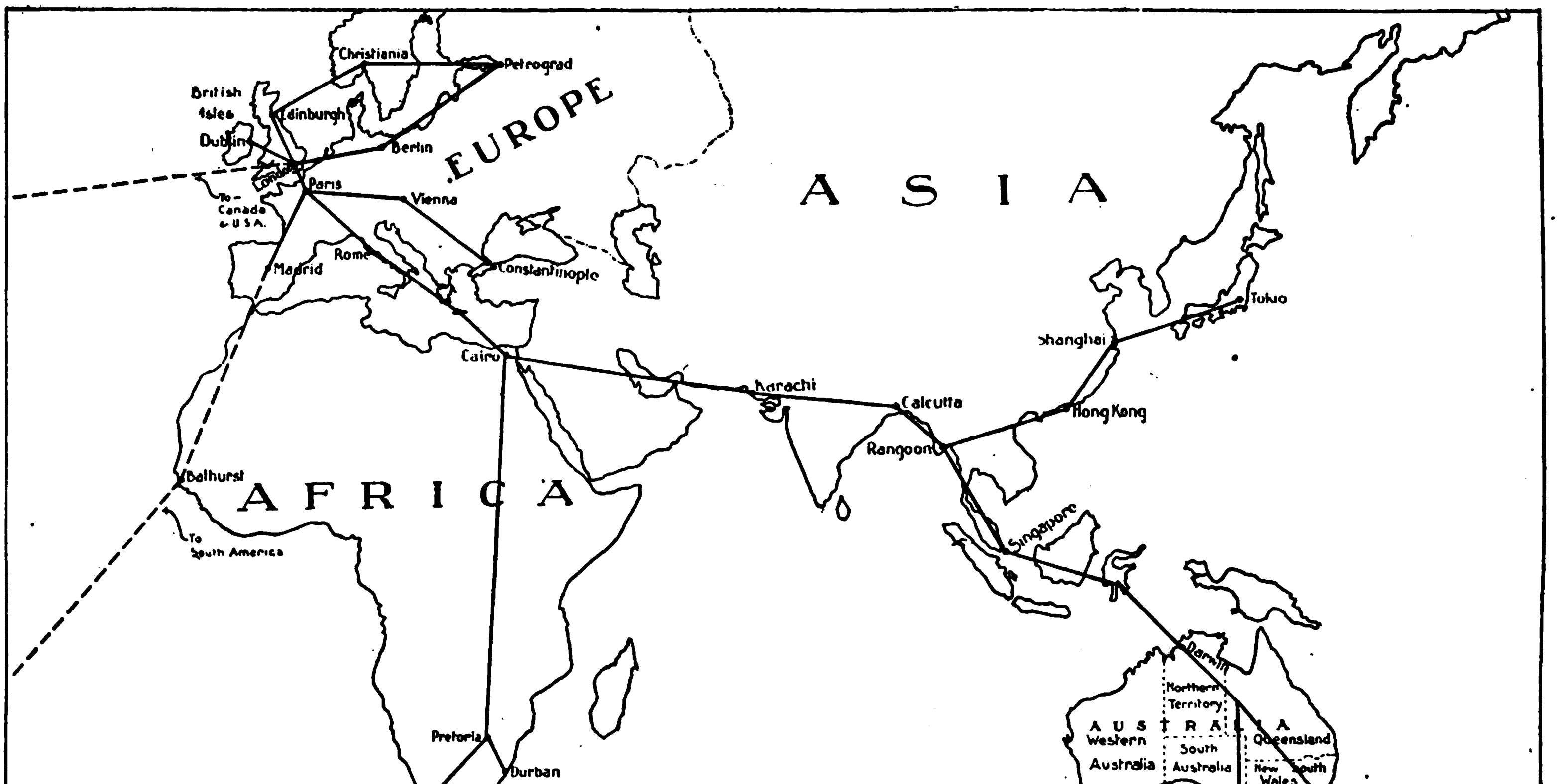
South China Air Service.—Delivery of 11 Curtiss seaplanes is expected at Hongkong in the course of a few days, and their arrival will enable a start to be made at once with the Macao-Canton aerial service.

Air-mail Service for China.—Lieut.-Colonel Smallwood, who is superintending the delivery of the Handley-Page aeroplanes purchased by the Chinese Ministry of Communications, claims that the flying boat is the most suitable type of machine for the Shanghai-Hongkong and Shanghai-Hankow mail service. It will be possible for one to post a letter at five in the evening in Shanghai, and it will be delivered next morning in Hankow. The Hongkong route will be almost entirely by water. Colonel Smallwood believes that two landing stations should be established—on water and on land—and Shanghai should be made the terminus of the Yangtze route. A Shanghai-Peking air mail is possible this spring.

HARBORS

Construction of Tokyo Harbor.—As a result of study and investigations, Mayor Tajiri has decided upon the outline of a plan to construct Tokyo harbor. Covering an area of about 20,000,000 *tsubo*, the proposed harbor is said to be of such a gigantic scale as is several times the port of Hamburg which is said to be the largest of the kind in the world. The work is expected to be set about next year and completed in ten years. The sum of Y.350,000,000 is estimated as the necessary expenditure.

Chefoo Harbor Works.—The report of the Engineer-in-Chief of the Chefoo Harbor Improvement Commission, covering the period from August 1, 1918, to December 31, 1919, states that very good progress has been made with both the foundation and superstructure of the breakwater, and its advanced state now affords very considerable protection against north-easterly wind. Work has been continued steadily on the foundations and superstructure of the Western Mole. The half-yearly report of the Chefoo Harbor Improvement Commission which has just been issued confines itself strictly to business. The work of harbor



AIR ROUTES BETWEEN THE FAR EAST AND THE REST OF THE WORLD

The air routes shown on this sketch map have, or are being tested, and will no doubt be established before long.

improvement was put in hand during 1915, the original scheme calling for its accomplishment in four years, but subsequently an extra year and a half were added. To afford sufficient protection for shipping the Harbor Improvement Commission decided upon a mole to be built to enclose an area which on the other side is bounded by the Bluff. This mole terminates in a quay. Farther out to sea, is the breakwater. The space which these works will enclose is to be dredged to a depth which, while probably insufficient for the greater Pacific liners, will render the port suitable for the trade of the average cargo steamer. The figures run into thousands of cubic yards of masonry, the heavy character of the work being exemplified by the use of three thousand blocks of masonry each of three tons' weight. As regards the mole the figures for masonry, sand, rubble and the inevitable "zincstuks" aggregate hundreds of thousands of cubic yards. The lower part is now approximately at its full height, fully protected on its outer and partly protected on its inner slope. The rubble foundation for the quay wall has been completed, the reinforced concrete caisson for its western end successfully sunk and filled, and that for the eastern end ready to be lowered into place as soon as required. Not much has to be said regarding finance. The treasurer's report for 1919 shows the following items of income: under Collection, Chefoo Tls. 118,432.93; Government grants, Tls. 15,714; five per cent. Customs loan Tls. 1,140,400; and interest Tls. 4,208.69; while the expenditure for the same period is Tls. 526,435.85.

Big Improvements at Chinwangtao.—A correspondent writes from Chinwangtao to the "Peking and Tientsin Times" reporting that commencing this spring, a new breakwater is to be built. Its length will be 2,500-ft. It is to be built outside the present breakwater, and will berth no less than five steamers. The two end berths will accommodate steamers up to 450-ft., and will have a depth at low water of 30-ft. on a soft bottom, which will enable them to ship 20,000 tons of The present breakwater is also to be widened so as to provide five berths on the outside, that when the work is completed they will have 16 berths, which will enable them to ship 20,000 tons of coal per day of 24 hours. The filling in of the lagoon near the present weighbridges, which would greatly improve the place, is also contemplated. There are also many minor improvements which will follow in the wake of the big schemes and from all outward appearance Chinwangtao is likely to become one of the most important ice-free ports in North China, and there is great credit due to the Kailan Mining Administration for their enterprise. The New Breakwater is to be of reinforced concrete. Experts from home are to supervise the work, and altogether this enterprise will be one of the biggest that has been undertaken at any time in China by one single company. The expenditure involved will probably be somewhere in the neighborhood of Tls. 7,000,000 and Tls. 8,000,000. Already a good deal of the machinery required in connection with reinforced concrete work is at Chinwangtao.

Hulutao Director-General.—Mr. Chow Shao-hsing has formally assumed his new post of Director-General of the reclamation of Hulutao for Lienshanwan in Fengtien. With the exception of the establishment of a new office, nothing has been decided chiefly because Military Governor Chang Tso-lin demands the appointment of one of his secretaries, Mr. Hsu Hung-chao, as co-director-general. This practically means that the all-powerful High Inspecting Commissioner of Manchuria, without caring anything about the prestige of Peking government, wants full control over the Hulutao affair because he argues that the provincial treasury of Fengtien will be responsible for the greater portion of the expenses. General Chang is reported to be in favor of the raising of a foreign loan locally for this purpose.

ELECTRICAL ENTERPRISES

New Cable to Bombay.—The new cable being laid to Bombay by the Eastern Extension Telegraphic Company is expected to be completed by May.

Power Plant in Formosa.—Work on the erection of a power plant to be located at Lake Candidius in Formosa will shortly be begun by the Taiwan Electricity Power Company, Ltd., of Taihoku, Formosa.

Tenders for Motors.—Tenders are invited for 112 induction motors by the Shanghai Municipal Council, specifications for which are to be obtained from the Shanghai Offices, Shanghai.

Big Power Plant Contract.—Stone & Webster have been selected by the Kiso Electrical and Industrial Company, Ltd., of Japan, to supervise the design and construction of a power plant to supply concerns in the territory surrounding Nagoya. The plant will be a 30,000-horsepower, hydro-electric development undertaking and will cost approximately $5,000,000. The present plan calls for its erection on the Kiso River under a water head of 110-ft. Stone & Webster have two members of the staff already in the Far East to study the power possibilities both in Japan and also at important points.

Telephones in Kiangsu.—In connection with the establishment of long-distance telephonic communications in Kiangsu province, the Ministry of Communications has approved the erection of buildings for telephone equipment in Nanking and Shanghai, with branch offices in Chapei and Pootung, suburbs of Shanghai.

Shanghai-Hangchow Telephone.—Acting upon the order of Tuchun Lu Yung-hsiang, of Chekiang, a military telephone line will be established between Shanghai and Hangchow. The line will be exclusively used by the Shanghai Military Commissioner, the Military Barracks at Kashing, the Military Commissioner at Sungkiang and the Tuchun's Yamen. It is understood that the work will cost about $8,000. The wire is to be strung on the telegraph poles of the Shanghai-Hangchow Railway, an agreement having been reached between the military and the railway authorities.

Wireless to Kashgar.—By the contract into which the Chinese Government entered with the Marconi Company it was provided that three powerful wireless stations should be erected at Lanchowfu, Urumchi in Sinkiang, and Kashgar which when completed would constitute the longest chain of wireless telegraph communication in the world. Recent happenings in Mongolia have apparently led to a reconsideration of the original plan, with the result that Lanchowfu was abandoned in favor of Urga. Urga will link up with Uliassutai and Kobdo by wireless installations previously purchased by the Chinese Government, and these in turn will communicate with the border settlement at Yulian. Though the land line to Urga works satisfactorily, it is subject to interruption, and the wireless will prove a useful supplement especially in view of the greater political importance attached by China to Mongolia. It may be added that the whole of the wireless material is in China and is awaiting transportation by camel and cart routes.

A Chinese Wireless Enterprise.—The Government is in receipt of a request by a number of Shanghai business men requesting permission to register a commercial wireless service with stations at Shanghai, Tientsin, Hankow and Tsinan, so as to facilitate commercial communications and to undertake, in the event of war, to make over the stations to the Government. The Government so far has made no reply to this request.

Electric Enterprises in Japan. — Electrical enterprises in Japan made remarkable development last year, due to the unusual activity prevailing in business circles. According to a report to hand, at the end of last year the number of companies undertaking the supply of electricity was 661, those operating electric trams 42, and those undertaking both supply and electric tram services 50, making a total of 753, an increase of 37 compared with the previous year. The amount of capital of these companies at the end of last year totalled Y.1,095,330,073, showing an increase of Y.215,335,067 compared with the preceding year.

Foochow Light and Power Co. Expands.—The Foochow Electric Light Co. has a monopoly of the sale of electrical power in Foochow and vicinity and has done well since opening business in 1910. The authorized capital of the company is $1,200,000 Mexican ($932,000 United States currency) and the paid-up capital, $857,580 Mexican ($666,000 United States currency). The number of lights (16-candlepower average) installed by the company increased from 36,000 in 1917 to 47,500 in 1918. Lighting is sold at flat rates or in accordance with the amount of current consumed. The flat rate is $1 Mexican ($0.78 gold) per month per lamp of 10 candlepower and the meter rate is $0.28 Mexican ($0.22 gold) per unit, with an additional charge of $1.50 Mexican ($1.17 gold) per month meter hire. The total gross profits in 1918 were $256,000, and net profits amounted to about $78,000.

During the year the company purchased 16 rice-polishing machines costing $1,550 from Japanese firms, renting out the machines and selling current for them at profitable figures. Recently, to check the tapping of wires and the stealing of current, the company commenced the installation of special Japanese-made meters, heavily protected to prevent tampering, which are so constructed that the entering current of 220 volts is changed to a current, which leads to the lamps, of 110 volts. This prevents the tapping of the wires above and below the meters.

The company recently ordered an American steam turbine generator of 1,000-kilowatt power and expected to install it in 1919. Much of the equipment is American, but recently, on account of the war, much wire and a large quantity of supplies have been purchased in Japan. In 1918 a reinforced concrete chimney, 152-ft. high, was erected at a cost of $10,000. The furnaces consume about 24 tons of coal a day. This coal comes from Formosa. The company has coal mines in the interior of the Province, but the cost of bringing the coal to Foochow makes it more expensive than the Formosan coal. The company plans to install a street railway system at Foochow. The manager is a Chinese educated in Japan and the assistant manager is a Chinese trained in the United States. Both are electrical engineers. An electric lighting plant is to be installed at Kienning in 1919, the material to come from Japan.

Protest Against Foreign-owned Wireless Stations in China.—The Peking Government has filed a protest with the Consular Body at Shanghai regarding the installation of wireless stations in the city by foreign official organs and

foreign residents. In instructing the Shanghai Commissioner for Foreign Affairs to take this matter up with the Consular Body the Government states that there are over forty foreign-owned wireless stations in the city, including those set up in the premises of the American, British, French and Japanese Consulates. As against these foreign-owned wireless plants China possesses but three stations in Shanghai, two of which are owned by the Ministry of Communications, while the third is controlled by the Ministry of the Navy. The Government adds that the American, Italian and Japanese Legations in Peking have also established wireless stations and that, as the erection of foreign wireless plants on Chinese soil is an infringement of Chinese sovereignty, the Chinese delegates to the Telegraph and Wireless Conference at Paris have been instructed to lodge a protest in this connection with the delegates of the foreign powers.

There are other foreign-owned wireless plants in China besides those mentioned in the Government's despatch to the Foreign Commissioner at Shanghai. The Japanese have set up masts at Tsingtao, Tsinanfu and Hankow and are using these installations to communicate with their Consulates and military forces stationed at the two latter ports. And it is reported in Peking that the Japanese are preparing to erect masts at Dalny, Mukden, Changchun and other points in Manchuria.

Foochow's 'Phone Facilities. — The Foochow Telephone Co. is controlled by the same group of Chinese who control the Foochow Electric Light Co. During 1918 a total business of $43,000 was done, of which $11,650 was profits The system is the double-wire system and operators, who speak English, are employed for the benefit of the foreign subscribers. The operators total 40 in number and the subscribers 592. The charge for an ordinary wall telephone is $46.60 per annum; for mitrophone, $55.92 per annum, and for a switch telephone in connection with a wall telephone, $27.96 per annum is charged.

The Chinese Government Telegraph Administration maintain 24 stations in inland places in the Province. These stations are connected by 600 miles of line. Four of these stations and 80 miles of line were added in 1918. During the recent revolutionary troubles eight of the stations were captured by rebels or brigands. An office of the Eastern Extension, Australasia and China Telegraph Co., a British company, is maintained at Foochow. At Sharp Peak, an island at the mouth of the Min River, the submarine cable of this company connecting Shanghai and Hongkong is landed. Three foreign operators live and are on duty in turn at this island station.

DOCKS

Foochow Dock at Standstill.—The Chinese Government Dock and Engineering Works are equipped with modern machinery and are in a position to do good engineering and ship repair work. Owing to the difficulties experienced in securing raw material from abroad on account of the war, the works have not been able to do much during the last few years. In 1918 several small launches were built and much repair work was done. Orders for warships were received, but construction was not commenced. There are three ways each capable of constructing ships up to 5,000 tons. Shipbuilding materials have been obtained from Great Britain, the United States, Shanghai, and Hongkong.—U.S. Consular Report.

CONSERVANCY

American Engineer for Min River.—The Min River and its branches form the principal means of communication between Foochow and its hinterland. However, above Foochow there are some dangerous rapids and, as the current is swift, the upward journey of boats is a risky and expensive matter. Steamers unload their cargo at Pagoda Anchorage, 25 miles from the sea and 9 miles below Foochow. Little has been done to improve the internal waterways or the Min River in the past.

In 1918, the Min River Conservancy Board was formed by members of the Chinese and foreign communities and a preliminary scheme drawn up with a view to improving the river to a depth of 10-ft. at low water between Foochow and Pagoda Anchorage. The project, which will cost about $700,000 and require three years' time to complete, has received the sanction of the Peking Government and the Diplomatic Corps at Peking. An American engineer has been engaged for the work, which was begun in the summer of 1919. Funds for the work are now being collected by means of a surtax of 5 per cent. on the import and export duties and tonnage dues levied by the Maritime Customs, which is helping to finance the scheme.

MINING

Tungsten in Burma.—Because of the war-time demand for wolfram (tungsten), the production in Burma increased during the years 1914-1918, although the methods and machinery used were crude. It is thought that when the figures for 1919 are published they will be found considerably less than for the previous year owing to the curtailment of operations in the mines, due to the fall in the price of wolfram ore, says a U. S. Consular Report. China also suffered in the enforced cessation of tungsten shipments due to the close of the war demand. But new and easily accessible supplies recently have been located and the Chinese may be in position soon to meet the decreased price of this steel-making material by lower costs of winning what they termed in wartime "black gold."

Output of Minerals in Japan.—According to returns published by the Japanese Department of Agriculture and Commerce, the output of the principal minerals for the month of November last is as follows:

	November		Subsequent to January
Gold ...	... 147,963	*monme*	1,656,038
Silver ...	... 3,473,025	,,	36,955,005
Copper ...	...10,353,726	*kin*	116,435,043
Coal ...	... 2,256,205	French tons	25,596,336
Iron ...	... 6,860	,,	68,769
Petroleum	... 164,420	*koku*	1,753,959
Sulphur	... 4,405	French tons	43,065

As compared with the corresponding month of the preceding year, gold shows a decrease of 11.4 per cent., silver 11.2 per cent., copper 8, and iron 3 and coal a gain of 25 per cent., petroleum 6.7, sulphur 16.9.

Coal and Iron Development in Shansi.—The proposed Sino-British co-operation for the development of the vast coal and iron deposits in Shansi province is so satisfactory, it has been stated, that the promoters of the enterprise are leaving for England and the United States to float the necessary capital so that mining operations can be commenced in northern Shansi as soon as possible. It is understood that the British Tao-Ching railway in Honan will be extended to this province by sanction of the Chinese government for the purpose of facilitating communications.

Magnesite and Talc in Manchuria.—It is reported that the magnesite deposits in Manchuria are sufficiently well proven up to show that they are extensive, and have a great potential value. The magnesite is for the most part too pure to use for making bricks without the admixture of 7 to 8 per cent. of iron. The Japanese own the larger part of the deposits, but the Chinese still have considerable areas under their control. Associated with the magnesite are numerous deposits of talc, which may be favorably compared with the high-grade French talc, but which have not yet been extensively developed. All of these deposits are from 3 to 10 miles from the South Manchurian Railway. As magnesite is in enormous demand as a lining for open hearth steel furnaces, the deposits are of great potential value.

Foreign Capital Opposed.—In view of a popular tendency among the local people to develop various mines in Kirin by means of foreign capital, entailing diplomatic complications, the Acting Commissioner of Industry of the Province issued a circular order to various district authorities to instruct the people to the effect that when they apply for mining concessions the applications must be accompanied by official certificates testifying that no foreign loans are connected with the enterprise. According to another report, the Agricultural and Commercial Department, Peking, decided to incorporate all the mines into national property.

Swatow Mining Industry.—The mining of wolfram ore near Swatow became important during 1918, but the falling off of the demand late in the year brought production to a standstill. Thousands of Chinese found employment in mining, collecting, and transporting this ore. This district and contiguous territory may be expected to resume production as soon as the market revives as upwards of $2,000,000 was the value of one year's shipments.

CONSTRUCTION

New Hotel at Peitaiho.—Under the auspices of Mr. Chu Chi-chien and other prominent personages, a company to supply hotel and restaurant services at Peitaiho, the North China summer resort, is being organized with a capital of $300,000. Official sanction for the organization of the company has already been obtained from the Ministry of Agriculture and Commerce.

Reconstruction of Hankow.—Certain of the native gentry of Hankow are now agitating for the commencement of the work of reconstruction which was planned for Hankow before the war broke out. An agreement was made in 1915 by Messrs. Samuel & Co., of London, for a loan for this purpose. The Hankow gentry want certain conditions modified and, unless this is done, they threaten to demand cancellation of the agreement on the ground that the loan was made to enable Yuan Shih-kai to carry on his monarchy scheme.

New Buildings in Kiukiang.—Kiukiang is just now much interested in the scores of new buildings going up on the filled-in land across the creek, and near the Railway Station, writes a correspondent at that port. The electric light building is being enlarged. The shops recently burned down are now being re erected, and to the regret of many the street is only being slightly widened. The foundations for the new Customs building, on the west of the creek, are now marked out, and it looks as if, at last, something is going to be done. Work has been started on the new building of the Asiatic Petroleum Co. on the Bund, next door to the Japanese Bank.

New Hotel at Atami.—A big hotel, said to have a projected capacity of 1,000 persons, is to be erected shortly at Atami, Japan, by a new company, capitalized at Y30,000,000, styled the Atami-Takaradzuka Estate Company, the principal promoters of which are Messrs. T. Kurachi, T. Wakao, K. Tomizu, and R. Takata. The new enterprise has already bought up the Atami Hotel at Y650,000, and a large amount of land in the environs of the hotel, on which site the new edifice will be constructed. Other hotels are planned in the neighborhood of Atami and at Takaradzuka.

New Hotel for Shanghai.—The Shanghai Hotels Co., Ltd., propose to begin erecting at the latter end of the year the largest hotel in the Far East, at a cost of about Taels 2,000,000. It will be 14 storeys high in the centre and 11 storeys in each of the two wings, and will contain 650 rooms. The dining room will seat 1,500 people. There will be two ball rooms, a theatre to seat 1,200 people, and all conveniences adopted by modern hotels in America. The main entrance will be on Bubbling Well Road, where the frontage will be 300-ft. Facing the racecourse there will be an open terrace 160-ft. by 26 ft., which will have behind it another terrace which can be closed in during the cold weather. The lobby will be carried out on a magnificent scale. The theatre will be steam heated in the winter and air cooled in the summer by direct attachment with the refrigerator plant. The plans are by Warren and Wetmort who designed the Baltimore, Commodore, Titz and Belmont Hotels in America.

FINANCIAL

Peking to Launch $30,000,000 Domestic Loan.—In connection with the issue of a domestic loan to provide funds for the construction of a railway from Shiachiachuang to Techow the "Shuntien Shih Pao" (Japanese) gives the folllowing details:—

The loan will be raised by the issue of industrial bonds by the Ministry of Communications.

The total issue will be $30,000,000, in $10,000, $1,000, $100, and $10 bonds. The bonds will carry interest of eight per cent., payable half-yearly.

The price of the bonds will be 95, Security, the surplus revenues of the Peking-Hankow railway. Repayment of the capital will commence in the third year and be completed in the twelfth year, by annual drawing of ten per cent. of the total bond issue. Interest will be paid in silver.

The proceeds of the loan will be used for:—

1.—The construction of the line from Shihchiachuang to Techow.

2.—The construction of a line from Changchow to Amoy, Fokien Province.

3.—To meet the deficit in the administrative expenditure at the next Chinese New Year.

Release of Customs Surplus to China.—On account of stringency of finance, the Peking Government has arranged with the Inspector-General of Customs to release the customs surplus to the amount of Tls. 3,000,000. But subsequent events proved that this scanty sum is hardly sufficient to enable the Government to tide over the alleged difficulties. Accordingly, the Inspector-General of Customs is requested to release a further amount of Tls. 1,000,000 in order to cope with emergencies. To this, the Customs authorities agreed.

Currency Reform—With a view of reforming the currency of the whole country on a uniform basis, the Chinese Ministry of Finance has issued circular orders to the provinces instructing the respective authorities to put a final stop to the circulation of debased currency. Unauthorised issue of bank notes is also strictly prohibited.

Singapore and Java Bank.—The directors of the London, Singapore & Java Bank announce that certain proposals have been made to them on behalf of a financial group with the object of acquiring a controlling interest in the bank by the purchase of its shares. The offer, which is made subject to acceptance by holders of not less than 85 per cent. of the shares, is to pay £12 for each £10 fully paid "A" share and £6 for each paid up £5 "B" share. It is understood that the prospective purchasers intend materially to change the scope of the bank's operations.

Banks at Hankow.—According to the Chinese Press, the Hankow branch of the Bank of Communications showed a profit of $220,000 last year, the Bank of China $240,000, the Bank of Chien Fong $160,000 and the Hwangpei Bank of Industry $140,000.

Liquidation of Territorial Bank.—Upon the recommendation of Mr. Yang Tseng, Commissioner of Foreign Affairs at Shanghai, the Government has ordered the Cabinet to discuss the liquidation of the Bank of Territorial Development in Shanghai. This bank, which recently passed into liquidation, involved many debtors and creditors, both foreign and Chinese. Owing to the constitutional procrastination of the Government much time has elapsed since the order was given and nothing has been done. Mr. Yang Tseng has again telegraphed for immediate instructions and asked to have officers sent to Shanghai to work on the matter. He claims that further delay on the part of the Government will occasion foreign protest.

New Exchange Bank.—A Chinese Exchange Bank—the Taiho Bank—is being established at Hongkong with a subscribed capital of £1,000,000, one-half paid up. The Bank's operations will be confined to exchange business, and branches are to be opened at Shanghai, Amoy, Singapore and Java.

Banque Industrielle Opens in Yokohama.—The Banque Industrielle de Chine is extending its operations to Yokohama. An office has been opened in Yokohama, and will be managed by Mr. Berthier, who has been in charge of the branch at Vladivostok for some time.

American Bank of China.—Papers were filed with the Secretary of State at Hartford, U.S.A., on January 1, incorporating the American Bank of China, Inc., the incorporators being Charles Denby of Washington and Samuel Spring and Percy Atlerton, both of Boston. The bank is authorized to begin business with a capital of $1,000,000, and its headquarters will be in Hartford. According to the company's charter it is empowered to engage in the banking business with China, Japan and the countries of the Far East, always in accordance with the general banking laws of Connecticut.

MISCELLANEOUS

Iron and Steel Imports.—Iron and steel imports into Hongkong for the last quarter of 1919 was £496,120, a decrease of about £250,000 in comparison with the previous three months.

Engineering Students Arrange Transfer to Peking University.—The two hundred and sixty-four engineering students of Peiyang University, Tientsin, have, according to a declaration issued recently, completed arrangements to take the entrance examinations to Peking Government University and finish their course in that institution. The students say that when the authorities set up an efficient administration at Peiyang they are prepared to return to this institution.

Motor-Bus Service for Shanghai.—According to an announcement an application has been made to the Shanghai Municipal Council by the "Chinese Motor-'Bus Company" for permission to inaugurate a service shortly. The service will be supervised by a Chinese automobile engineer who has recently returned from abroad.

Japanese Post Offices in Shantung.—The question of the establishing of postal offices and telegraph stations by Japanese authorities in the Tsinanfu-Tsingtau Railway zone since the capture of Tsingtau has been referred to the Shantung provincial authorities for a thorough investigation before the lodging of a strong protest with the Japanese Government in accordance with treaties concluded between the two countries.—"Peking Leader."

Navigation in North Manchuria.—An agreement is reported to have been entered into by Chinese and the Russian Soviet in Heiho governing navigation of the Amur and Sungari Rivers by Chinese steamers.

Custom's Guild is Formed in Shanghai.—Dissatisfied with recent methods of control the outdoor staff of the Maritime Customs at Shanghai held a meeting on March 11 and unanimously—one dissentient—passed a resolution in favor of the formation of a Custom's Guild as a protective measure. After the resolution 148 immediately signed the roll of membership.

Predicts Trans-Pacifi Fares to Rise.—Higher passenger fares on the Pacific liners are predicted by a prominent shipping man interviewed by "The Japan Advertiser." Although the rates are now higher than before the war, they are not increasing in proportion to the cost of service, and the steamship companies cannot continue to give the present accommodations for the present fare. On the first class liners of the principal companies the fare from Yokohama to San Francisco or Vancouver is now $250.

This shipping expert expressed the opinion that the present amount of travel to the Orient is abnormal, and is inclined to believe that when conditions resume normality there will be a falling off in travel to the Far East. Before the war, he says, the majority of trans-Pacific travelers were tourists and government and civil employes to and from the Philippines. At present this travel is augmented by a large number of American business men. The new Shipping Board steamers will amply accommodate the present visible travel when they are all in operation, which would make the construction of new liners a greater gamble that shipping men care to take.

Privately owned steamship companies operating on the Pacific are not at present considering the building of new passenger liners for handling the great number of prospective travelers to the Far East. Plans are drawn and ready to be submitted to contractors for the construction of the new Toyo Kisen Kaisha liner, which is to be named the *San Francisco Maru*. Work has gone no further than this, and events of the next two years will determine whether it will be profitable to construct such a steamer.

Big shipping men of the Far East are watching closely the effect on the Pacific passenger trade of the placing of the big liners of the United States Shipping Board on the Pacific run. These men are of the opinion that the present condition of affairs is only temporary and are direct results of the great war. The Far East is undergoing a great reconstruction period and it is believed that within the next two years conditions will become settled and it will then be possible to make a correct estimate of the number of passenger ships which may be profitably operated.

Japanese Universities for China. — A press despatch from Tokyo reports that under the auspices of a certain Japanese resident in China a highly interesting plan is maturing among Japanese and Chinese interested in the international trade of the two countries. The plan, according to the "Seoul Press," consists in the establishment of twenty universities in North and South China and the publication of a great newspaper. Between 100 and 150 million yen will be raised by subscription among the promoters as a fund for its execution. The motive of the authors and supporters of the plan is to fill up the void keenly felt by all intelligent Japanese interested in China—the absence of any instrument worthy of mention to serve as a permanent link connecting the civilizations of the two peoples.

Japan's Foreign Trade.—According to investigations made by the Japanese Department of Finance, Japan's foreign trade during February amounted to Y.173,116,000 for exports and to Y.269.998,000 for imports, showing an excess of Y.96,882,000 in favor of imports.

Chinese Coolies Return.—Of the 90,000 Chinese coolies engaged in France, 70,000 had been repatriated by the end of February. The remaining 20,000, specially selected, will continue their work for a further period of two years.

Chinese Delegates to U. S.—It is announced that Mr. C. C. Nieh, Manager of the Hong Foong Cotton Mill and Dr. John Y. Lee, of the National Committee of the Y.M.C.A., have been appointed to represent China at the International Trade Conference to be held at San Francisco from April 1 to 5. Mr. Nieh proposes subsequently to tour the United States and Europe to investigate factory condition.

Japan's Trade with the South Seas.—Japan's trade with the Straits Settlements, the Dutch East Indies, French Indo China, the Philippines and Siam for last year amounted to Y.82,369,539 in exports and Y.131,121,481 in imports, totalling Y.213,493.620. Compared with the preceding year, the exports show a decrease of Y.44,629,555 while the imports show a gain of Y.12,862,704.

Sino-German Commercial Treaty.—The Chinese Government, in view of the persistent request on the part of the German Government, presented through the diplomatic channel of Minister W. W. Yen in Denmark, has now replied to the Minister by wire that, pending the final settlement between this country and Germany with regard to the signing of the Peace Treaty, there is no possibility of renewing the commercial relations in the immediate future. The Minister is requested to bring this decision before the German authorities on behalf of the Chinese Government.

Official Inspection of Cotton.—The Industrial Bureau of Shantung received advice from Peking to the effect that the Cotton Adjustment Office will detail Mr. Hsiung Chi-kuei, a member of the Office, to inspect the actual conditions. Instructions have been issued to the District Magistrates concerned to make preparations to receive Mr. Hsiung and facilitate his inspection.

Japan-China Export Trade.—The total value of Japanese exports to China during February was Y.34,049,000, according to a report issued by the Finance Department. The figure was an increase of Y.920,000 over the corresponding period of last year and of Y.2,794,000 over January this year. The shipments to the Yangtze provinces and to South China fell away somewhat, but the exports to Manchuria and North China recorded a pretty good advance.

Sino-Japanese Commerce Commission. — The Tokyo Commerce Commission recently called a conference. Subsequent to the interchange of opinions a Sino-Japanese Commerce Commission was advocated as an organization for the mutual benefit of the two countries. In the Conference, the following five resolutions were passed :—

(1) That China and Japan will be on an equal footing, and merchants of both countries will enjoy similar privileges. It is asserted that this will bring about universal peace in the Far East and indirectly peace in the World.

(2) That mutual co-operation should exist between Chinese and Japanese Commerce Commissions.

(3) That commercial conferences should be held at least once every year so as to discuss the results of local Japanese Commerce Commissions and those established in this country.

(4) That various commercial associations and commissions be encouraged to bring about co-operation, which will result in successful enterprises.

(5) That a Sino-Japanese Commerce Commission should be inaugurated. It is reported that effective steps are being taken to summon a great Conference at the beginning of next month for the discussion of the whole question so that final approval may be given to the above items.

Japanese Exhibition in 1922.—The Japanese Department of Agriculture and Commerce and the Japan Exhibition Association are arranging to hold, in 1922, a great national exhibition in celebration of the restoration of Peace and completion of the Meiji Shrine.

China's Debased Currency.—The Diplomatic Corps at Peking has addressed a Note to the Ministry of Foreign Affairs, protesting against the issue of debased copper coins by the Government Mint at Nanking, as a result of which, it is alleged, the financial market in Shanghai has been much affected. The Note points out that in spite of the former protest of the foreign Legations, the Nanking Mint recently again turned out one million debased copper coins and handed them to the Shanghai branch office of the Bank of China to be issued in that port. The Government is requested to issue orders to stop the issue of these coins in Shanghai, as, in the opinion of the foreign ministers, the circulation of such debased coins in the Shanghai market would cause serious financial losses to the people there. The Ministry of Foreign Affairs has brought the matter to the notice of the Ministry of Finance for the latter to deal with.

Women as Tram Conductors.—Tokyo, with an eye on economy, is considering a scheme whereby she may checkmate the demand for increased wages made by the tram conductors. The success attending the employment of women on the motor-buses has set the Bureau officials to thinking that women might be employed as tram-conductors. The advantages of the scheme are obvious. They will work for less wages, and will give little trouble by threatening strike. It is questionable whether the motor-men will continue to work in this event. It is the general opinion that out of sympathy with male conductors the motor-men may strike. Nagasaki is also favorable to such a scheme, and has already selected certain candidates for the experiment.

Tokyo-Yokohama Canal.—In order to develop the districts between Tokyo and Yokohama for industrial purposes, a proposal is afoot to construct a canal between the two cities which will serve intermediate centres. The proposal was discussed at a meeting held recently, a plan of the canal being submitted.

Another Sino-Japanese Corporation.—A certain Japanese capitalist named "Ta-chan-hsi-po-lan" has been negotiating with the Fengtien Authorities for the organization of a Sino-Japanese Corporation for the development of Eastern Mongolia. A set of regulations has already been drawn up for the formation of a Company to be styled the "Hsing Fa" Company, which will have the control of all affairs connected with the reclamation of waste lands in Eastern Mongolia. The capital will be Y.6,000,000, to be equally subscribed by the Chinese and the Japanese: and the head office will be in Mukden.

Cable Delays.—A letter circulated to members of the British Chamber of Commerce, Shanghai, to explain the delay in cables between Shanghai and Europe states: Out of six groups of lines operating before the war, only four are operating at the moment. Of the three routes which formerly served (normally) China and Japan only one is operating. The trouble is further aggravated by new breaks between Cornwall and Gibraltar. Cable is being manufactured for extensions from Gibraltar to Singapore but when it will be laid it is impossible to say.

Oriental Steel Companies Buy Equipment.—The William B. Pollock Co. of Youngstown, Ohio, is filling a contract for 50-gross-ton capacity hot metal, ladle cars and 315-cubic-feet capacity cinder cars for the blast furnaces and steel plant of the Han Yeh Ping Iron and Coal Co. It is also supplying 75-ton hot metal ladles and cars for the two new blast furnaces of the Indian Iron and Steel Co., Calcutta.

Transportation in Tokyo.—Traffic problem in Tokyo becomes increasingly difficult, and there is more talk of building tube railways in the district near the Tokyo Railway Station. There is an increasingly large number of modern office buildings, and it is calculated that by the end of three or four years, there will be something like 60,000 to 70,000 people employed in this section alone. The street car and electric train services are at present over-taxed and drastic measures will soon be necessary to relieve the congestion.

Hawaii Wants Chinese Laborers.—A delegation of citizens from Hawaii, appearing before the House Immigration Committee, requested modification of the immigration laws so as to permit the bringing of 40,000 Chinese coolies into the territory for work on sugar and rice plantations. Spokesmen for the delegation said Japanese workmen were on strike and that the Chinese were needed to work the crops. No action was taken on the request, and the delegation will be given a further hearing later in the week.

Motor Boats in China.—Motor boats are gaining in popularity among the Chinese, and the time seems not far distant when they will be in far more general use for business and pleasure. It is reported to the Far Eastern Division of the Commerce Bureau that at least fifty boats are being constructed in the various yards at Canton, and that there is a demand for motor-boat engines developing from 15 to 35 horse-power. While American engines are popular, manufacturers should take into consideration that the Chinese give great weight to the price, rather than basing their purchases solely on quality, especially as European manufacturers undoubtedly will take advantage of this fact in their efforts to capture this growing market.

Chinese Skilled Engineers.—Chinese locomotive engineers have the gentlest sense of touch with the air-brake of any in the world. A break in two is almost unheard of, and there is very little damage to cars in shunting on Chinese railways.

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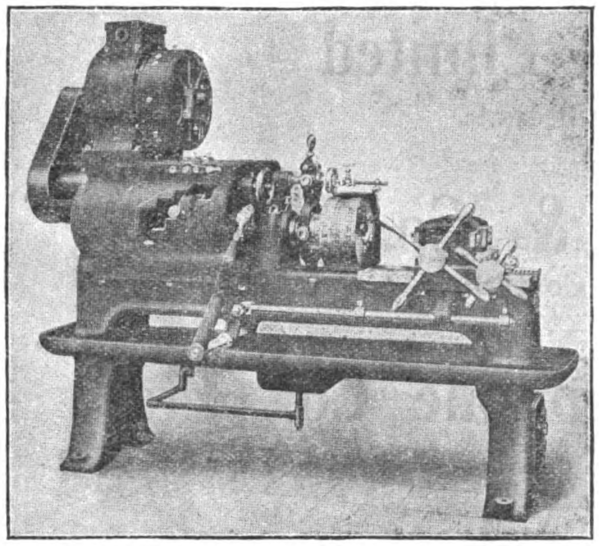

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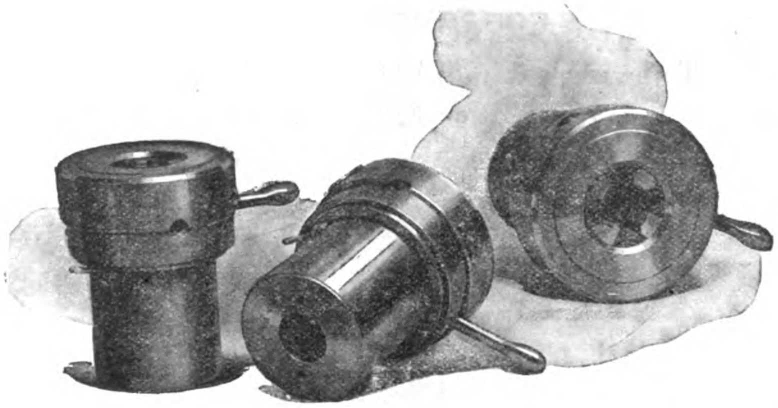

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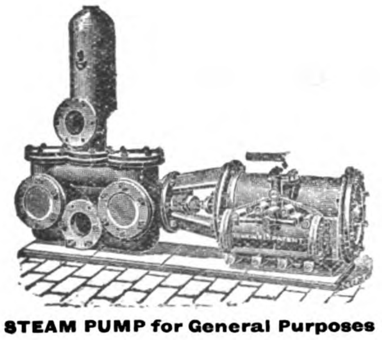

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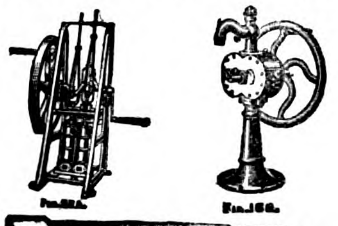

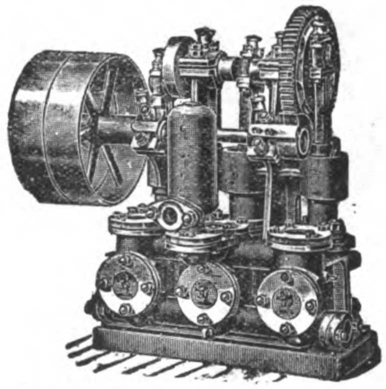

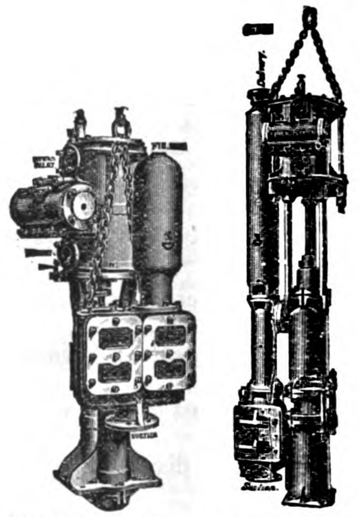

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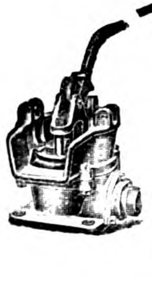

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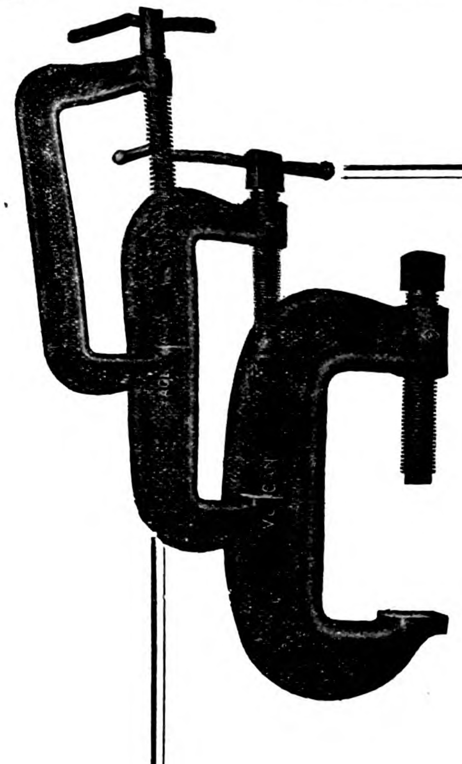

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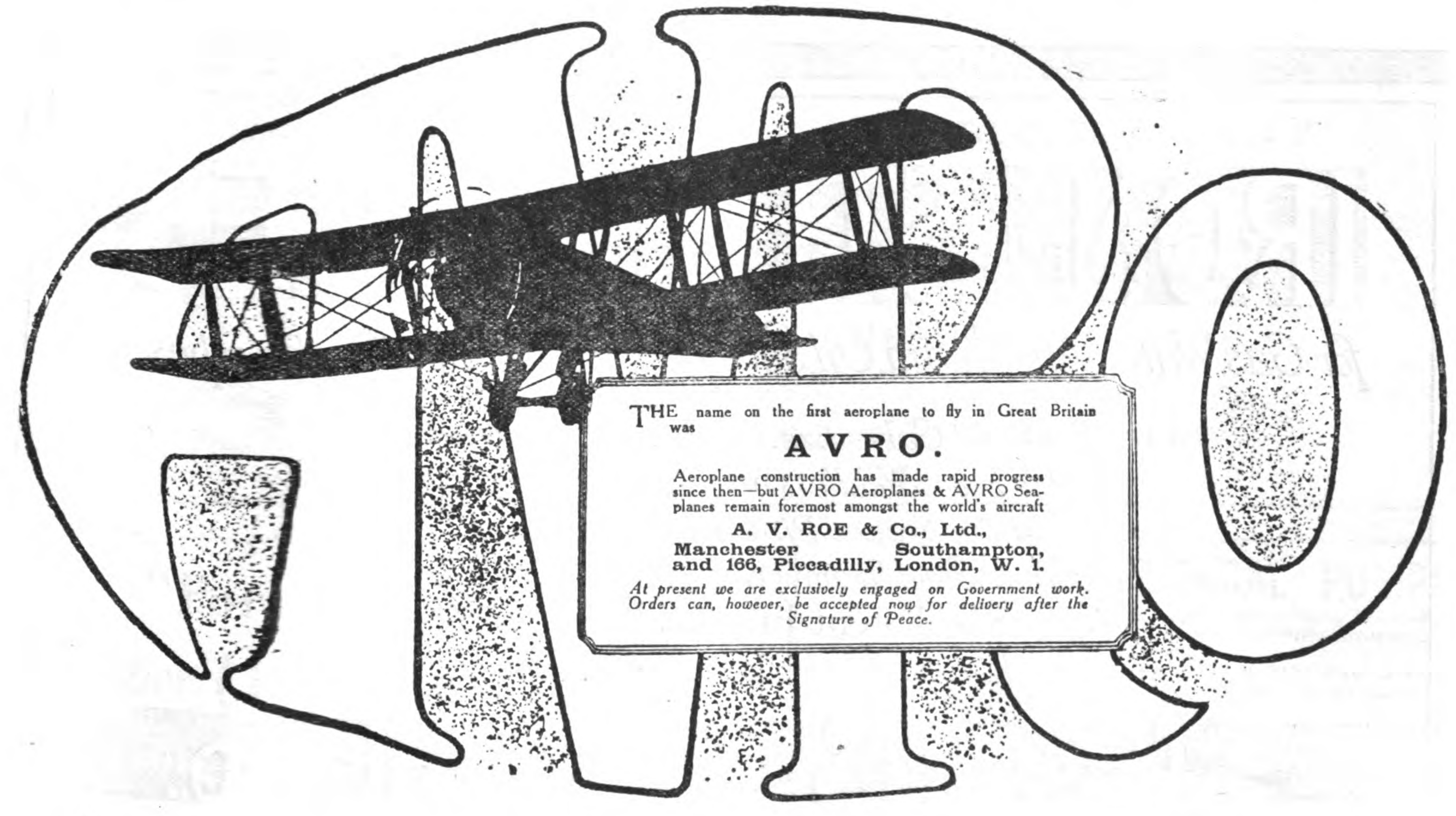

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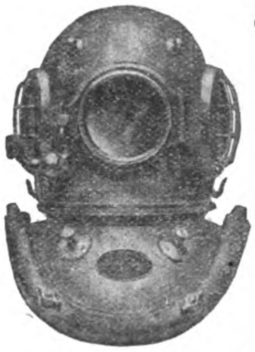

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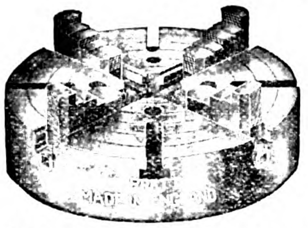

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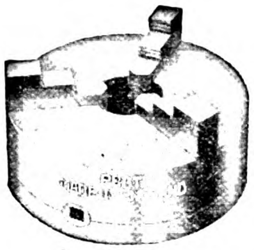

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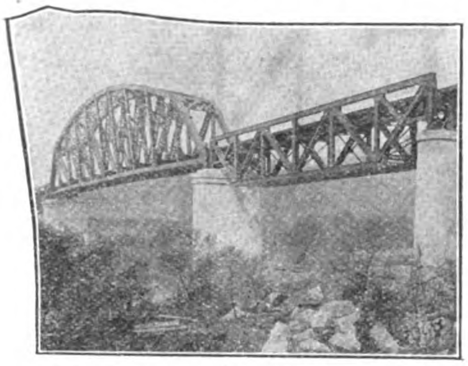

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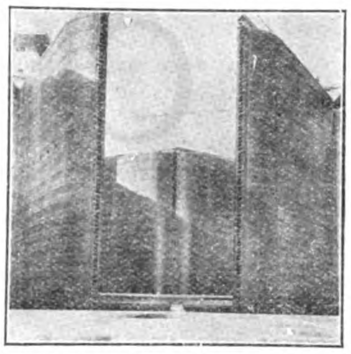

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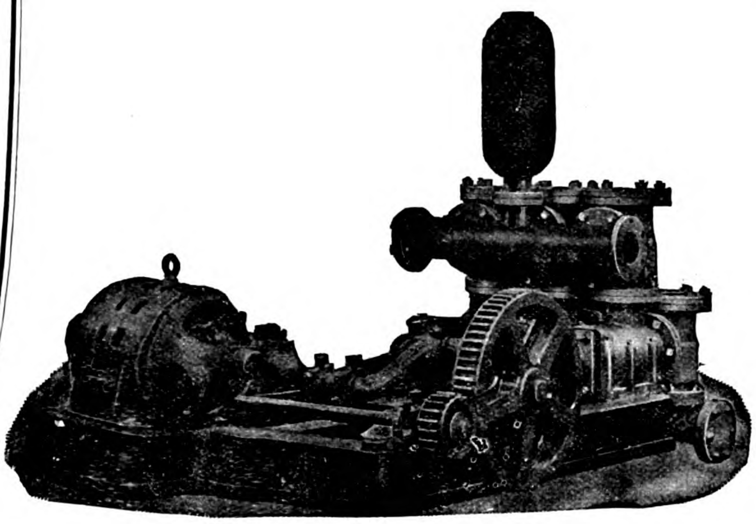

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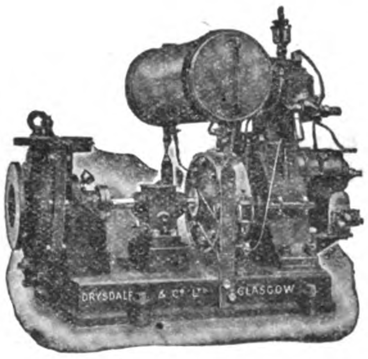

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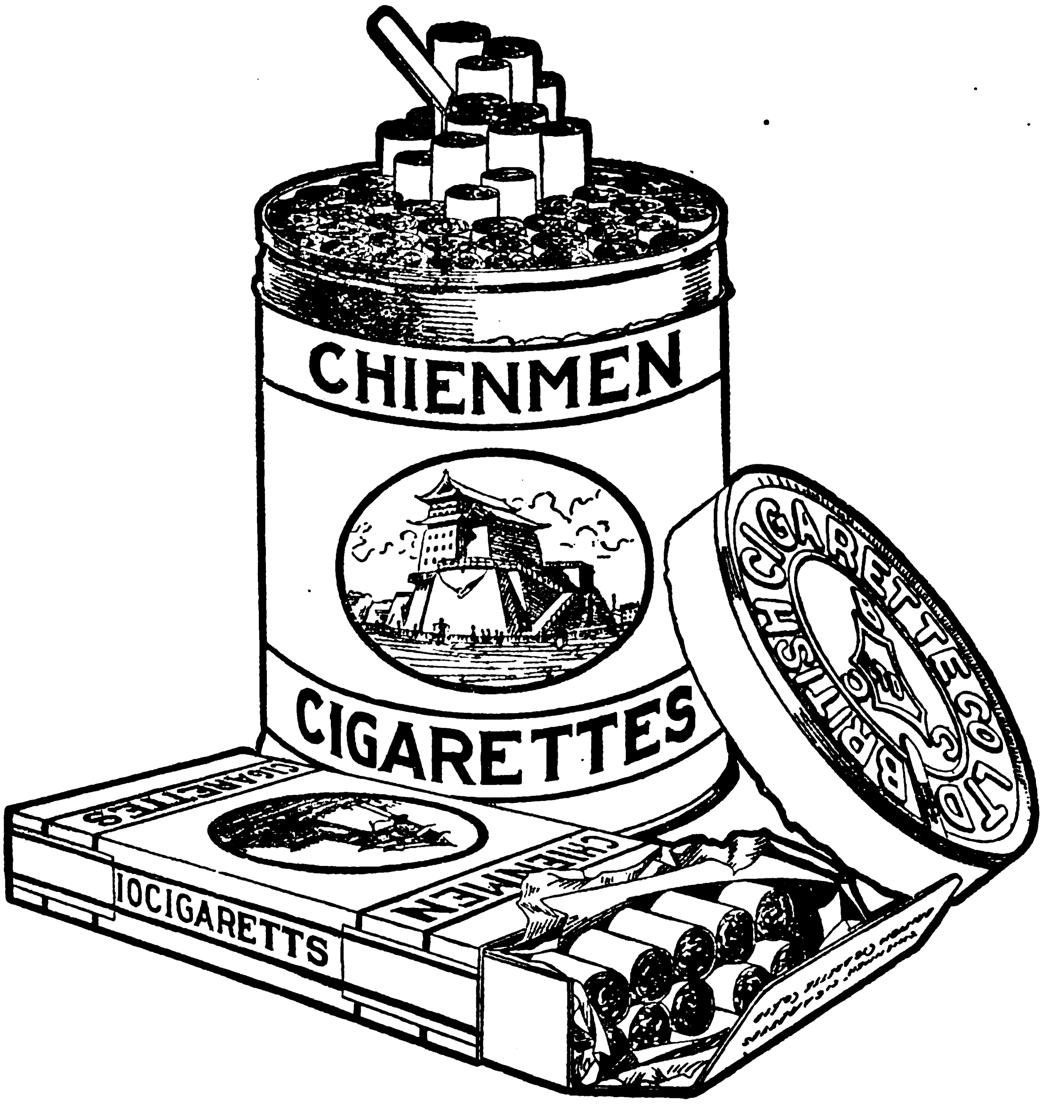

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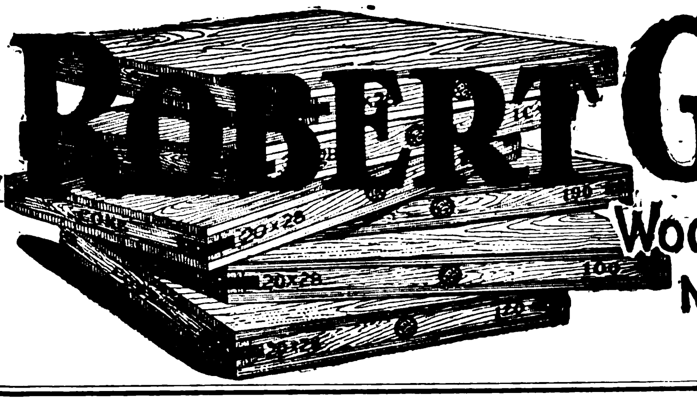

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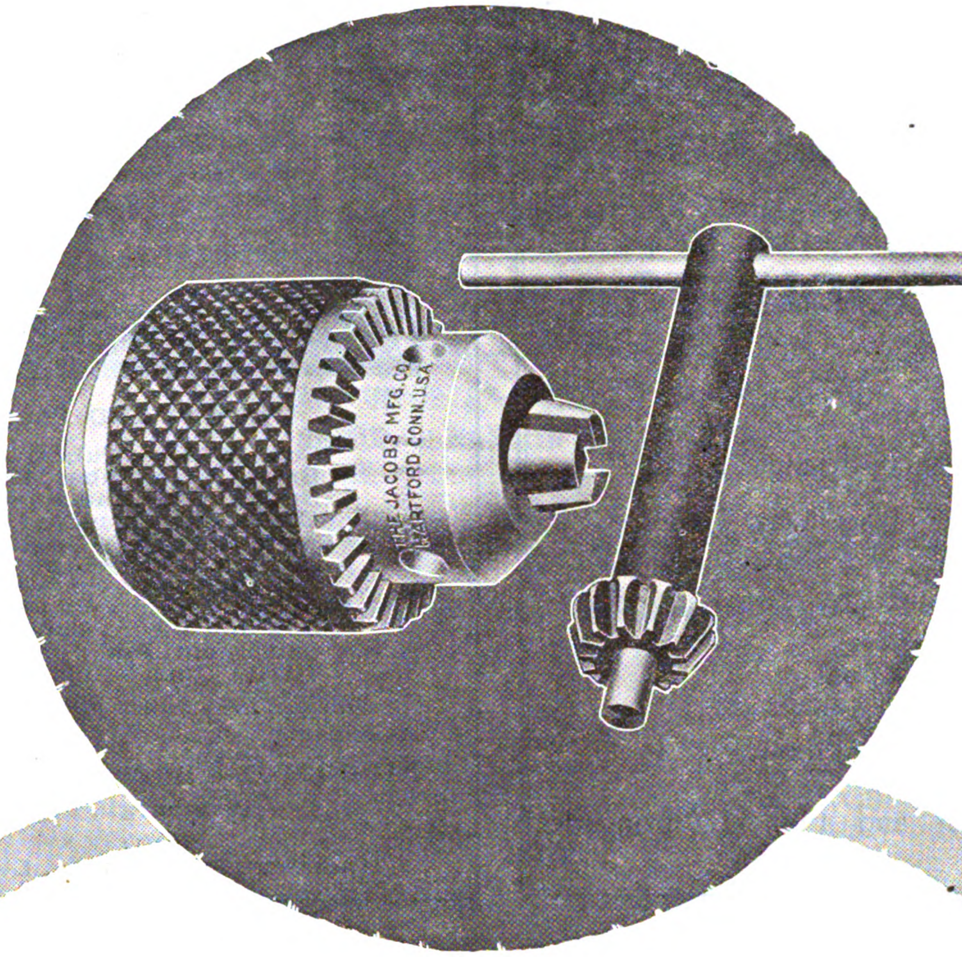

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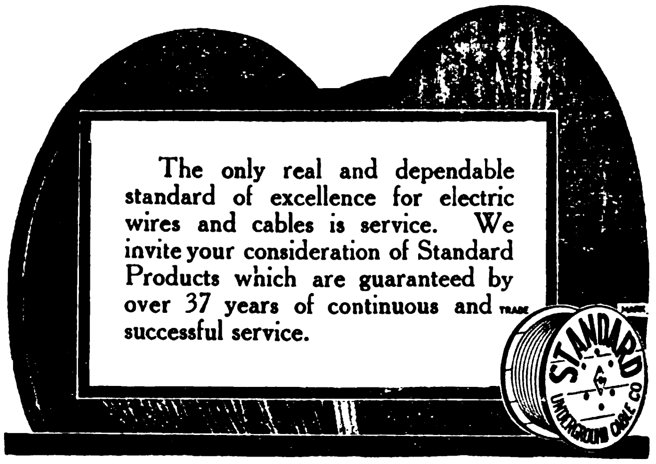

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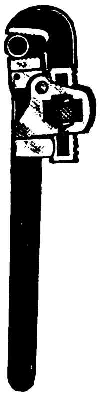

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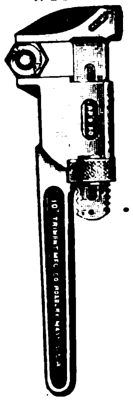

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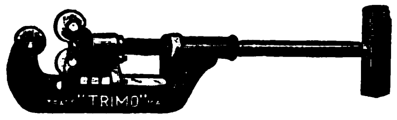

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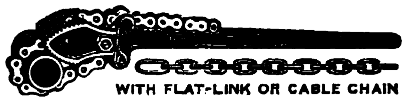

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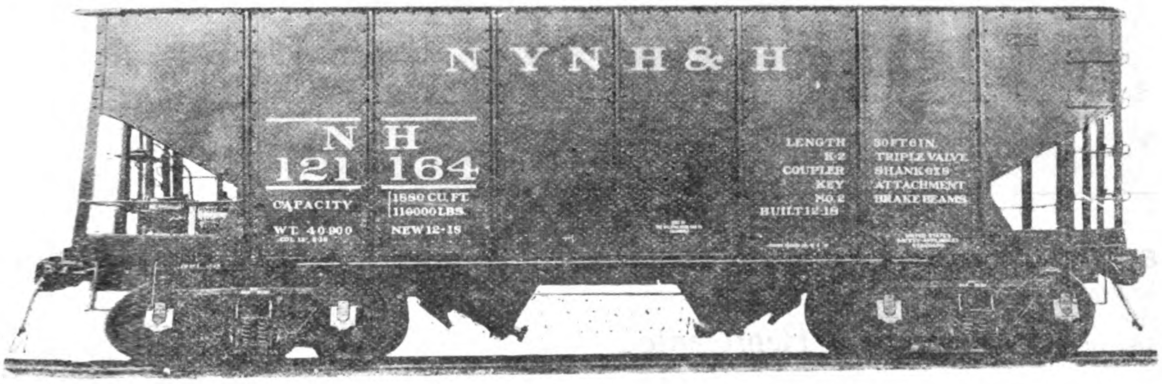

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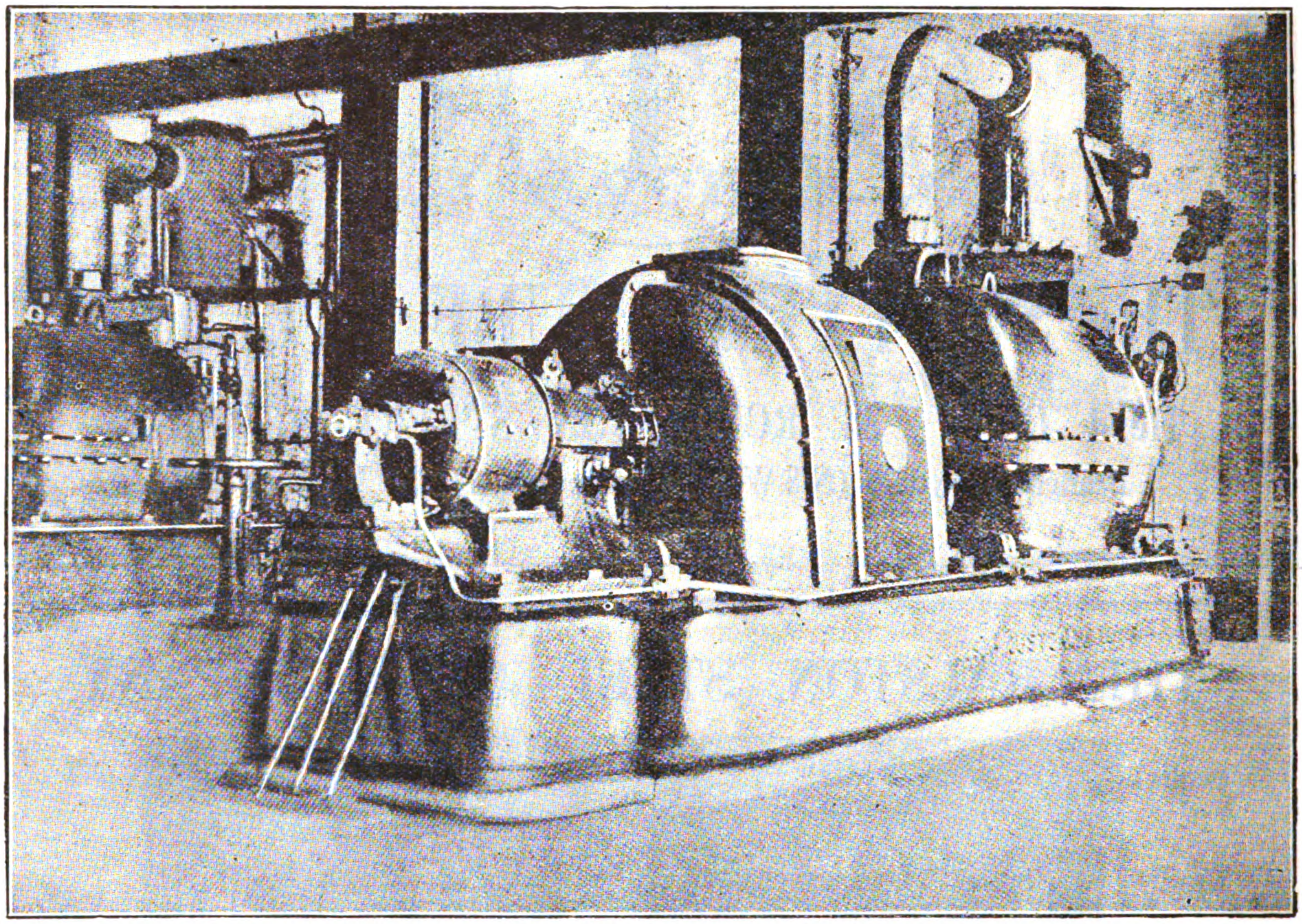

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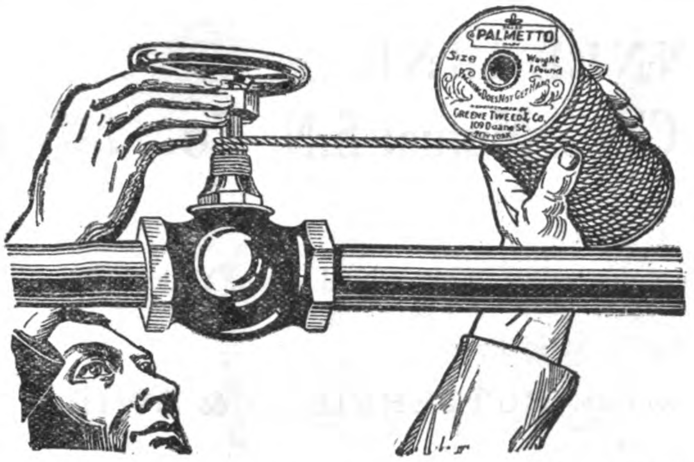

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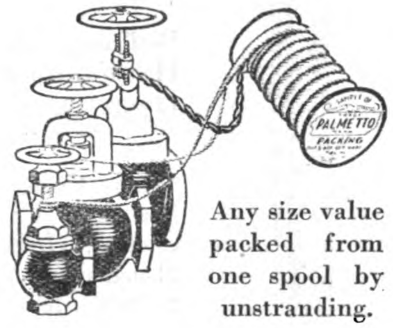

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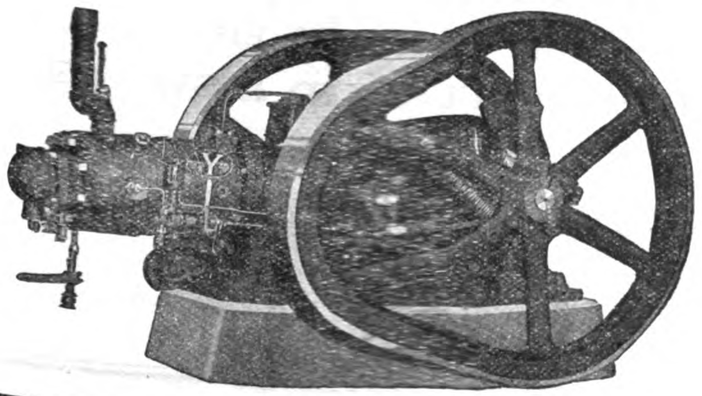

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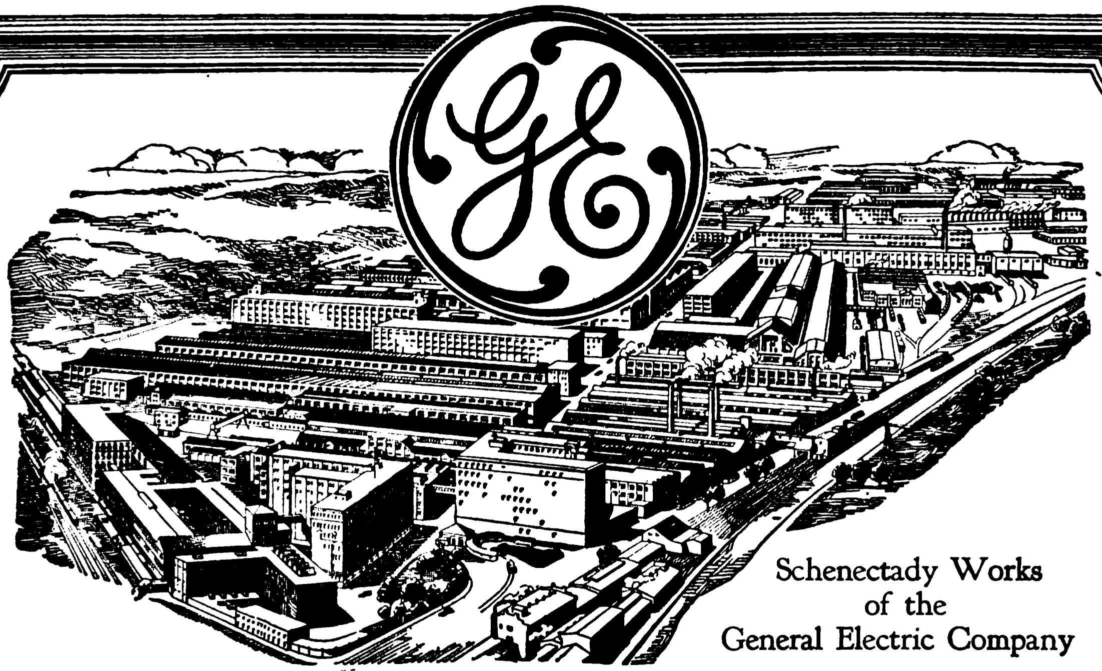

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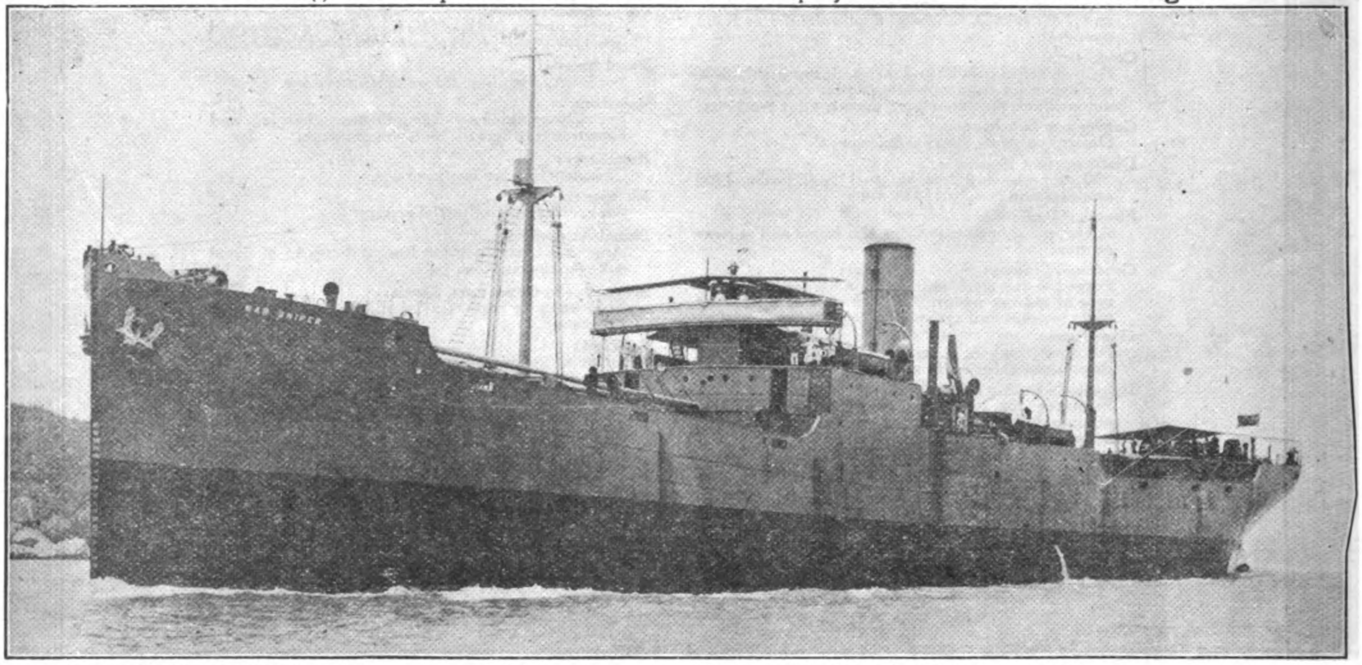

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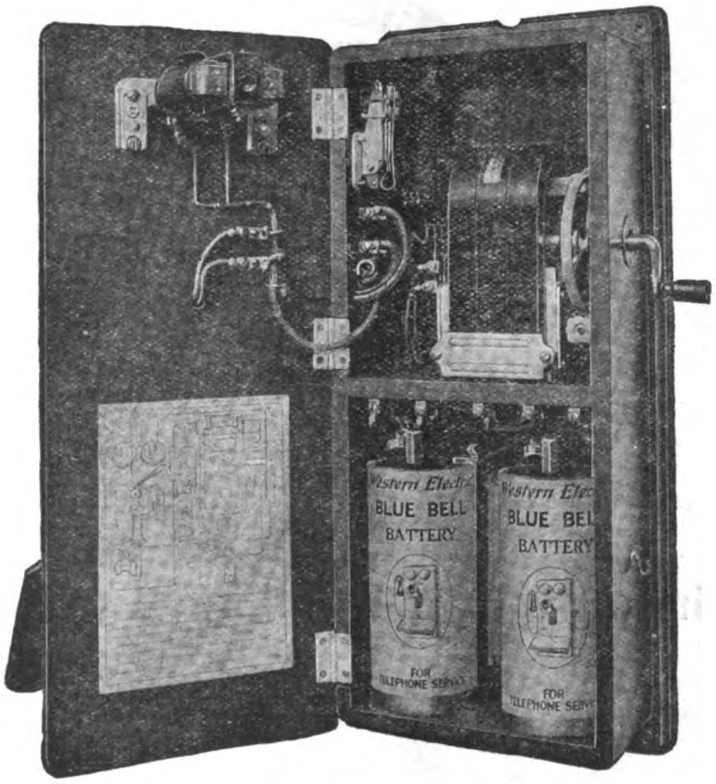

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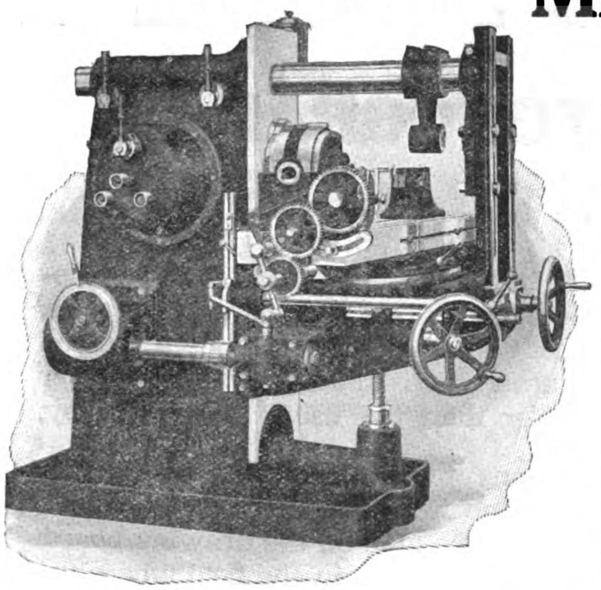

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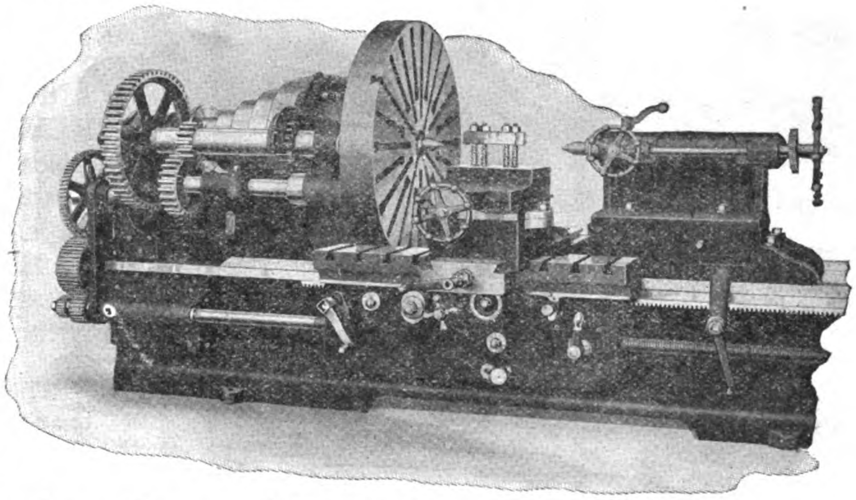

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1878 – PATENTED – 1910

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As strong as "A 1" Dynamite
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Safer to handle AFTER mixing, than any other powder
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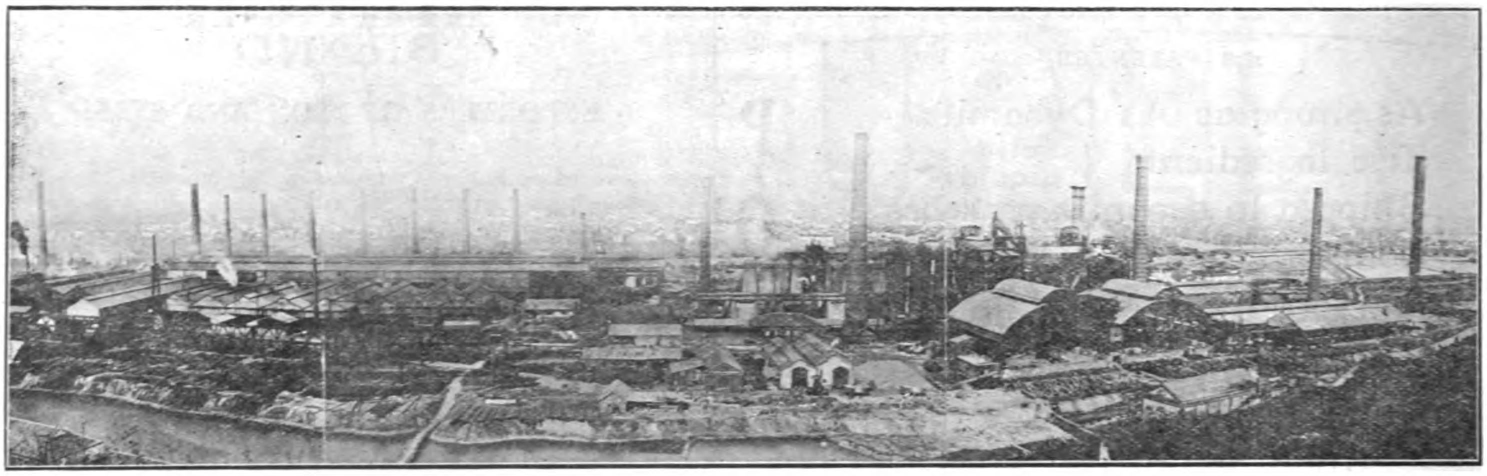
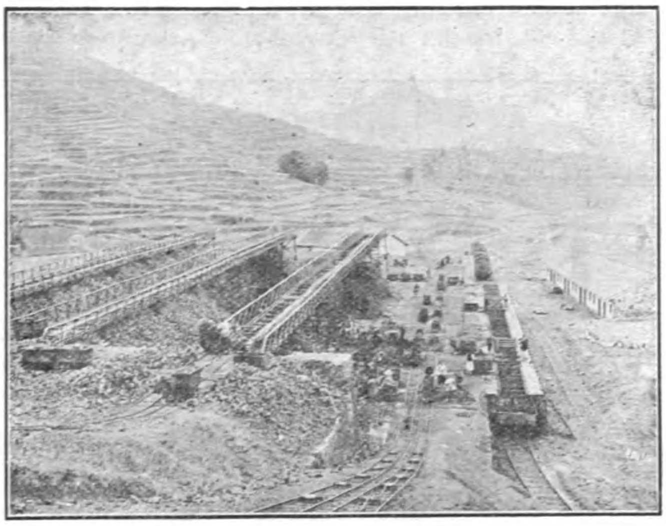
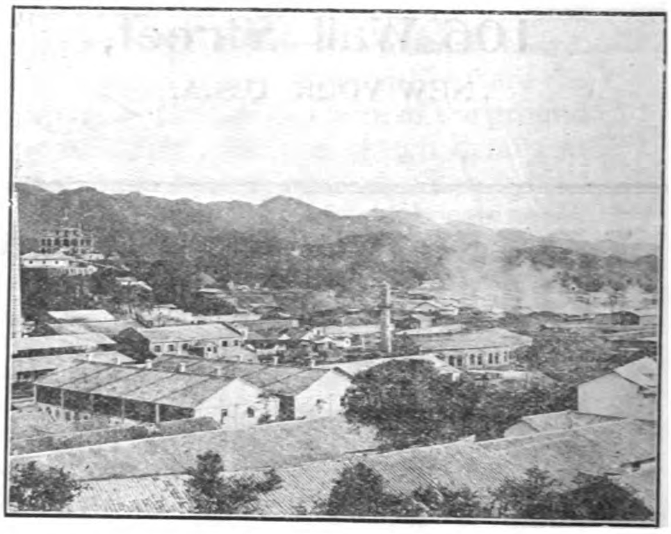


GENERAL VIEW OF HANYANG IRON AND STEEL WORKS

Incorporating The Hanyang Iron & Steel Works, The Tayeh Iron Mines, The Pinghsiang Colliery.



THE TIEHSHAN MINE AT TAYEH



PARTIAL VIEW OF THE PINGHSIANG COLLIERY

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PRODUCERS OF Pig Iron, both Basic and Foundry, Steel Ingots, Blooms and Billets. Steel Flat, Round, and Square Bars.

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Telegraphic Address: "HANSTEEL," Shanghai.

Codes Used: A.B.C. 5th Edition; Bentley, Engineering 2d Edition; & Western Union.

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American Trading Co., 1 Itchome Yurakucho, Kojimachi-Ku, Tokyo, Japan.

American Trading Co., 99 Kitamachi, Kobe, Japan.

United Engineers, Ltd., Singapore, Straits Settlements.

Daylight and fresh air cost nothing, but pay big dividends in increased output and better production. These free aids to efficiency are provided in ample measure by Truscon Steel Windows. Moreover, they afford thorough protection against fire and the elements.

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John Chambers & Son, Ltd. (Chemical Products only), Auckland, New Zealand
Dunedin, „ „
Wellington, „ „
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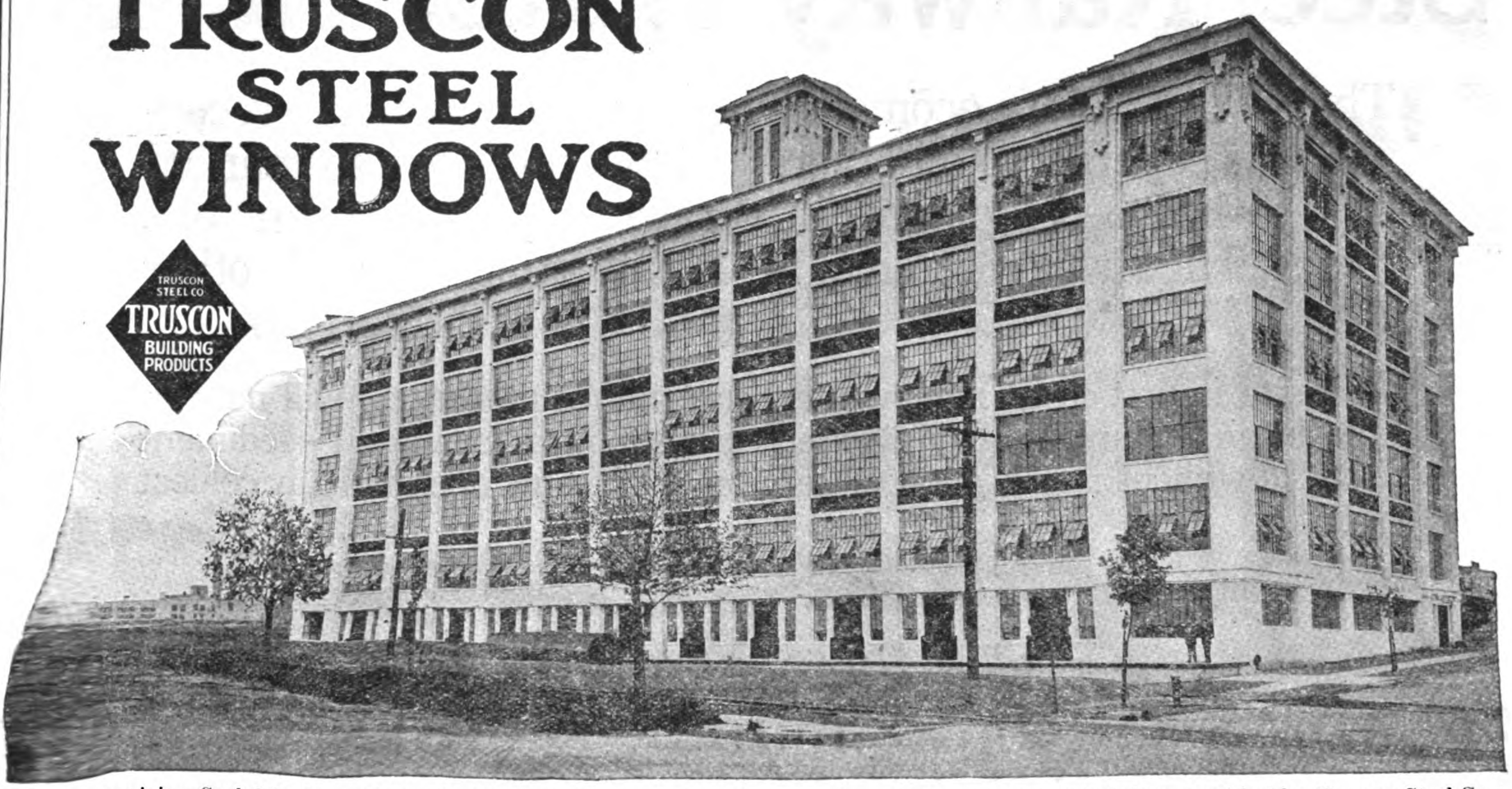
Soerabaya Bandoeng
Batavia Medan
Tegal Makassar

TRUSCON STEEL WINDOWS



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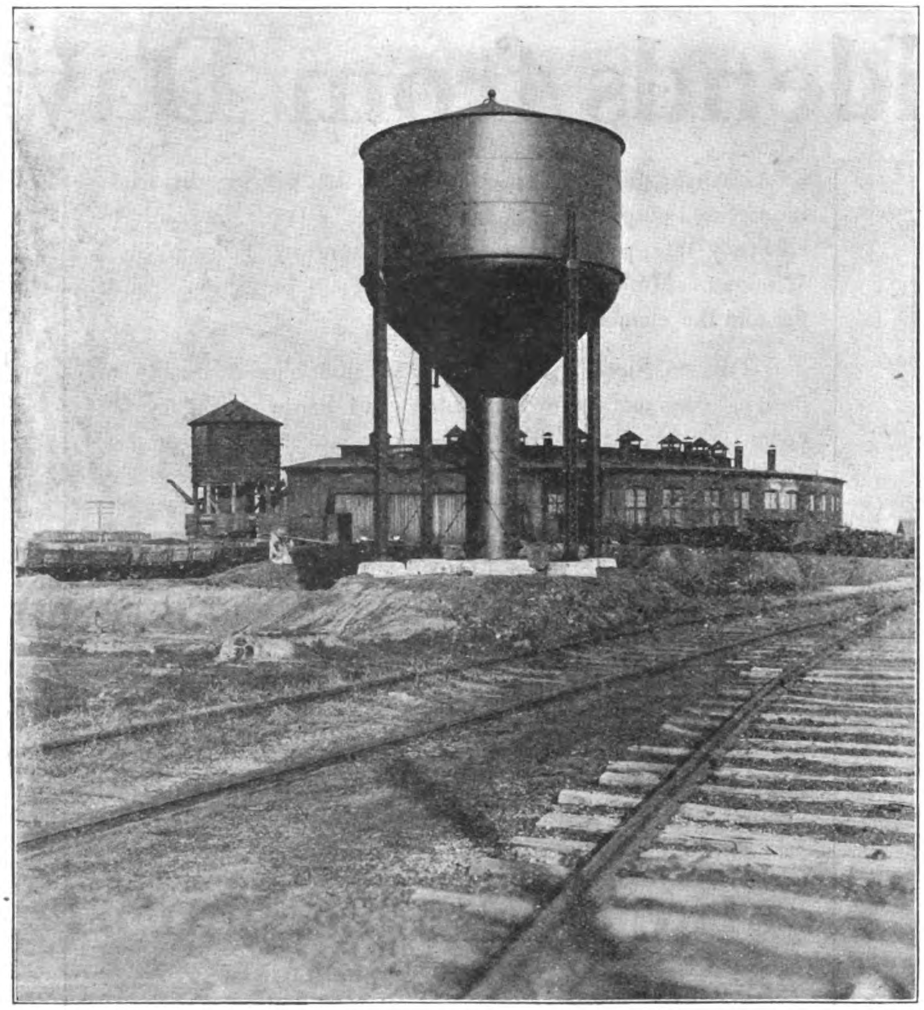

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The ALL-STEEL Locomotive Service Tank is today recognized as superior to all others. Its features are so marked that it has been placed in service on more than one hundred Railway Systems in North America and other parts of the world.

Moderate in first cost—minimum expense for maintenance—will not rot, leak, burn or burst—muddy water clarified by precipitation—sediment removed without interruption of service—successful operation in coldest latitudes.

Made in any capacity and elevation.

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BRIDGEBURG, ONTARIO, CANADA

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You can't do better than install this drill in your plant. We firmly believe you will not have it in operation more than a month before you will begin to congratulate yourself on your good judgment in adding this machine to your equipment. The materials and workmanship that you can depend upon for long service are features of the construction of our drill, and we issue descriptive bulletin which will give you full details.

Write for it to-day

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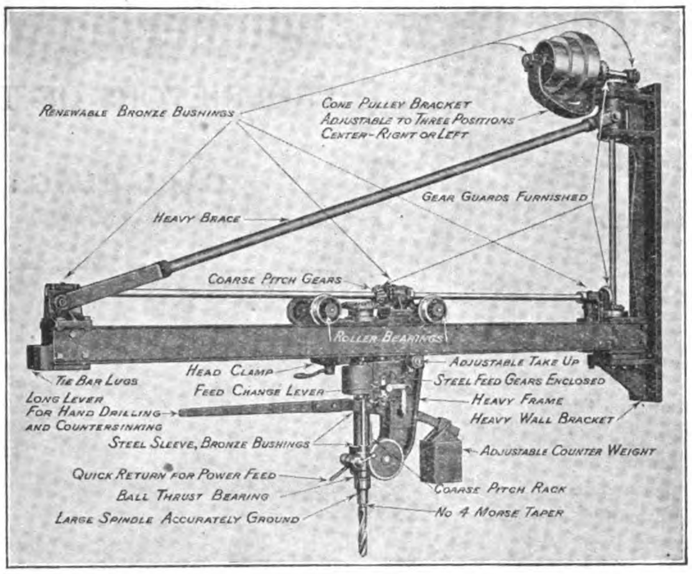

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Rated size	Drills to centre of	Wall to end of arm
7-ft.	14-ft. circle	10-ft.
9-ft.	18-ft. circle	12-ft.
11-ft.	22-ft. circle	14-ft.
13-ft.	26-ft. circle	16-ft.

Other lengths of arm to suit requirements.

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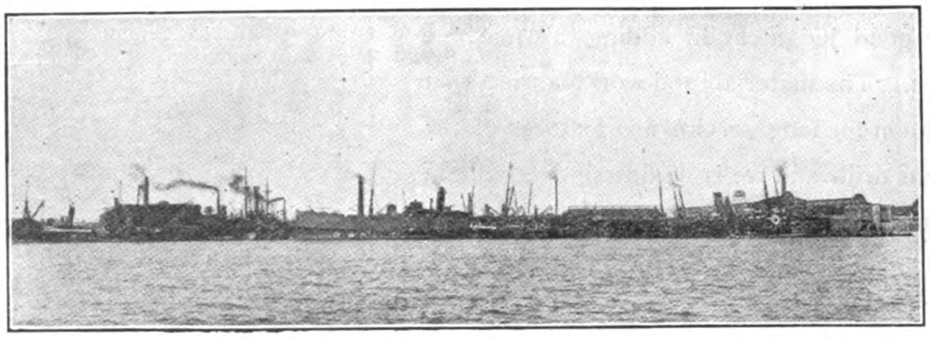
Secretary & General Office	,,	84
Drawing Office	,,	3
Superintendent	,,	83
Dockmaster's Office	,,	80
Vulcan Works & Extension to Boiler Shop Office	,,	82



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Codes Used: A.B.C. 5th Edition Engineering Bentley's, and Western Union.

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Showing s.s. *Telamon* (4,509 tons) in Dock and nine vessels undergoing repairs at one time alongside Company's Wharves

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The Works, Yards, Dock, Patent Slips, and Offices are situated on the Shanghai side of the river, opposite the centre of shipping and ten minutes by road or water from the heart of the city. The property owned by the Company covers an area of about 35 English acres with a river frontage of 1,600 feet, with wharves and pontoons to accommodate vessels whilst undergoing repairs. Shear Legs with steam power to lift 70 tons are placed at the head of the Dock, and slips for hauling up small vessels are provided.

The Works are equipped with the most modern machinery, electrically driven and capable of handling the largest Marine Engineering Work. Light railway lines are laid throughout workshops and yards.

A staff of divers, and complete salvage outfit is held in readiness for all cases of emergency, also Floating Cranes.

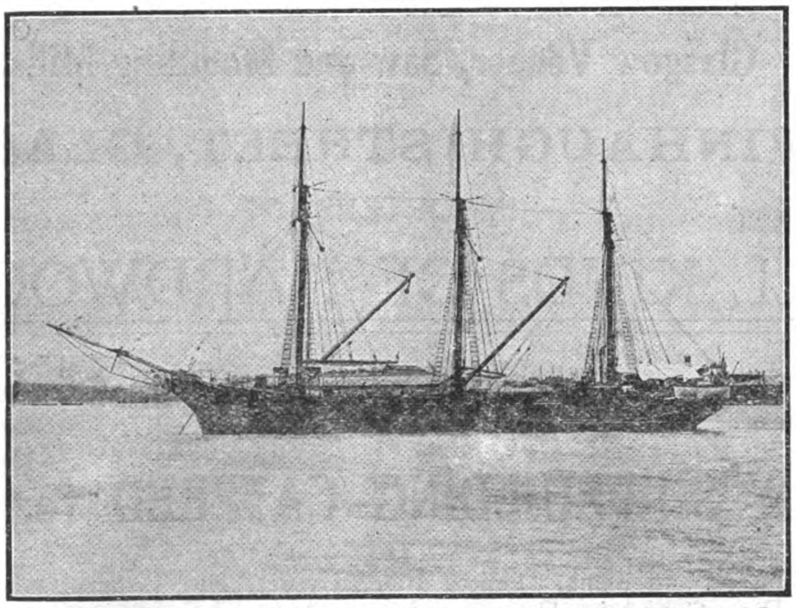
Contracts are undertaken for Coast and River steamers, tugboats, launches, lighters, pontoons, shallow draft side or steel steamers. Every description of repairs and renewal work expeditiously executed at most moderate charges.

Makers of the "SPEEDY" Marine Motor Engine—up to 50 B.H.P.

PARTICULARS OF DOCK

Length on blocks		570 feet
,, overall		577 ,,
Entrance		70 ,,
Width of sill		60 ,,
Depth to floor		28 ,,
Depth on sill	(H.W.O.S. tides)	21 ,,
Depth on 3 feet blocks	(do)	21 ,,

LARGE PATENT SLIP TO ACCOMMODATE VESSELS UP TO 200 FEET IN LENGTH



Steel Auxiliary Schooner *Alfonso*, built to Lloyd's highest class. Length, 156-ft. O. A., 135-ft. B. P. breadth, 30-ft.; depth, 14-ft.; 6-in., 550 tons. Fitted with Auxiliary Crude Oil Motor Engines.

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SUMITOMO GENERAL HEAD OFFICE AND
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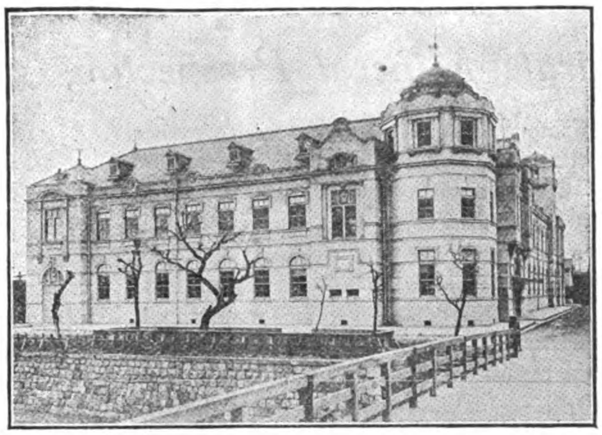

The Firm of Sumitomo

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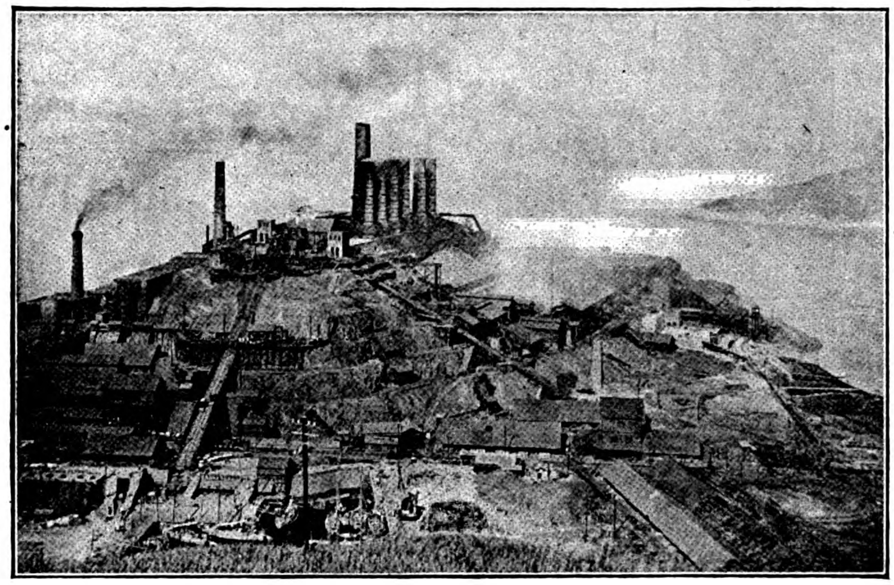

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Copper Sales Dept.	Kobe
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Wakamatsu Coal Dept.	Wakamatsu, Chikuzen
Copper Works	Osaka
Electric Wire and Cable Works	Osaka
Fertilizer Manufactory	Niihama, Iyo
Sapporo Mine Office	Sapporo
Tokyo Sales Dept.	Hiramatsucho, Tokyo
Kure Sales Dept.	Kure near Hiroshima
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Established March, 1912

(Successors to the Sumitomo Bank)

Subscribed Capital	**Yen 30,000,000**
Paid-up Capital	**„ 26,250,000**
Reserve Fund	**„ 4,600,000**

President:

BARON K. SUMITOMO

Managing Directors:

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T. KANOH, Esq. N. YATSUSHIRO, Esq.

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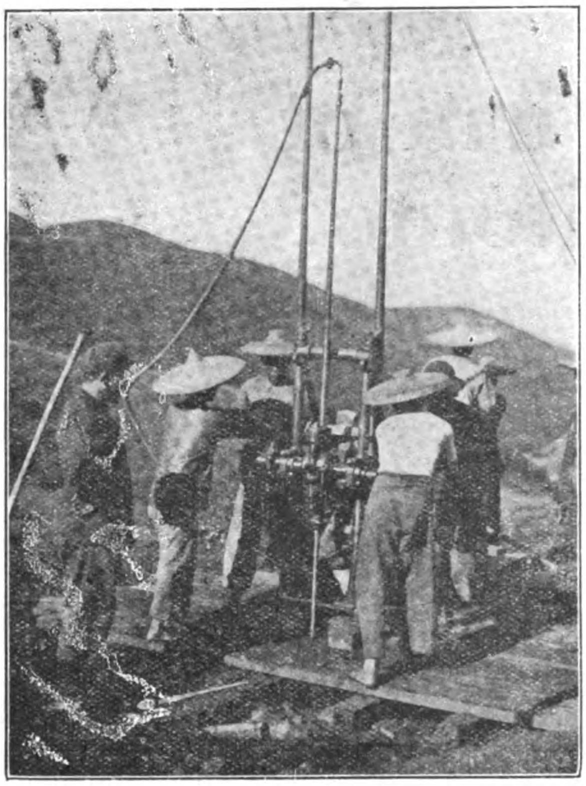

For Accurate Mineral Prospecting

A set of diamond drill cores is the surest evidence you can get as to the extent and value of your ore deposits, and will enable you to count as "Ore in sight," what would otherwise be "estimated reserves."

Enterprising mines everywhere use Sullivan Diamond Drills for investigating their deposits, not only to appraise values, but to determine the best and cheapest method of development.

Sullivan Drills are always in stock—for surface or underground, angle or vertical drilling; for drilling 50 feet or a mile deep; for cores one inch to six inches thick; for hand, steam or air.

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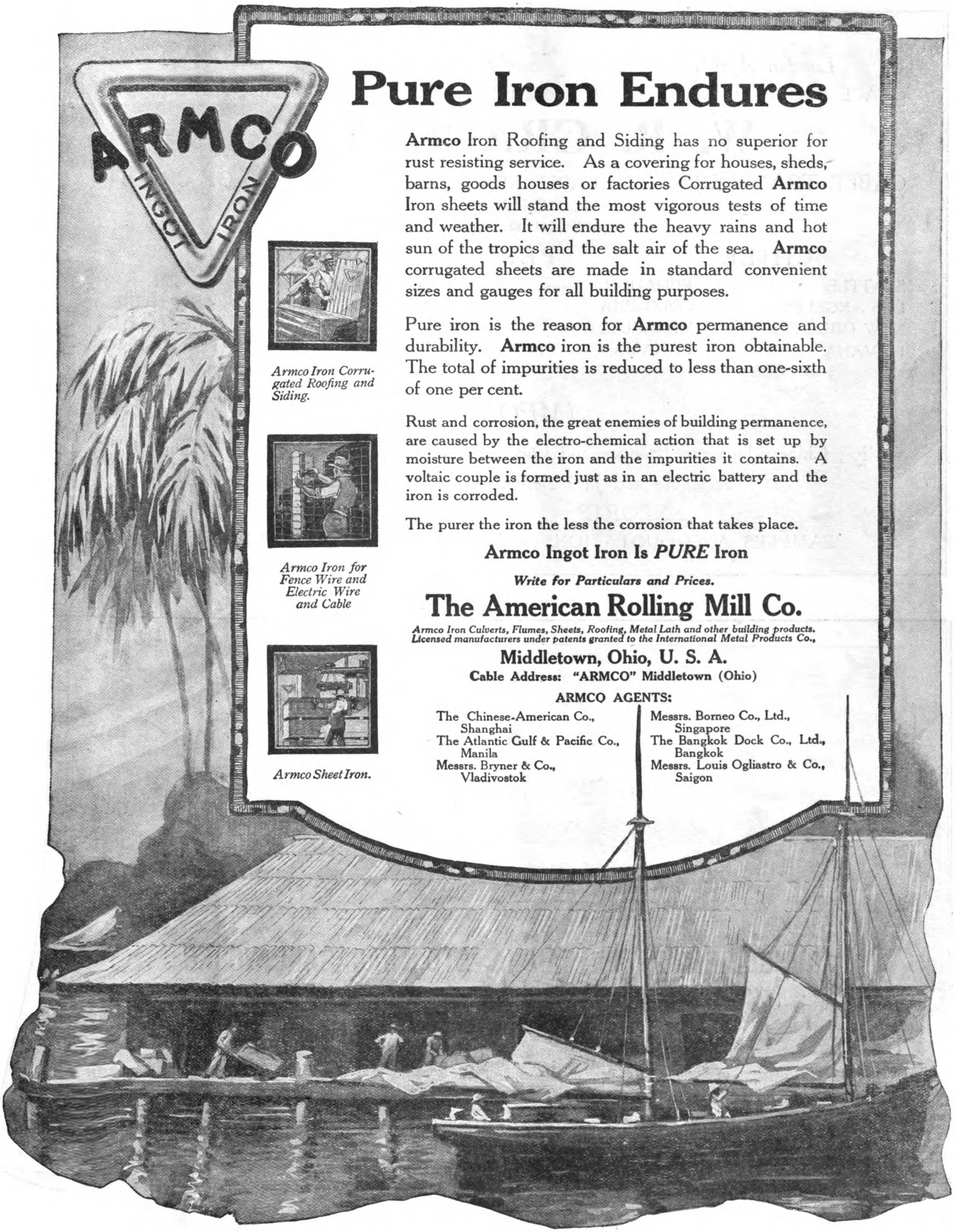
Powerful Salvage and Towing Boat will be supplied at Short Notice.

One 200-ton Floating Crane and Cranes of Medium Capacity.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INGOT IRON
Pure Iron Endures
Armco Iron Roofing and Siding has no superior for rust resisting service. As a covering for houses, sheds, barns, goods houses or factories Corrugated Armco Iron sheets will stand the most vigorous tests of time and weather. It will endure the heavy rains and hot sun of the tropics and the salt air of the sea. Armco corrugated sheets are made in standard convenient sizes and gauges for all building purposes.
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The purer the iron the less the corrosion that takes place.
Armco Ingot Iron Is PURE Iron
Write for Particulars and Prices.
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Cable Address: "ARMCO" Middletown (Ohio)
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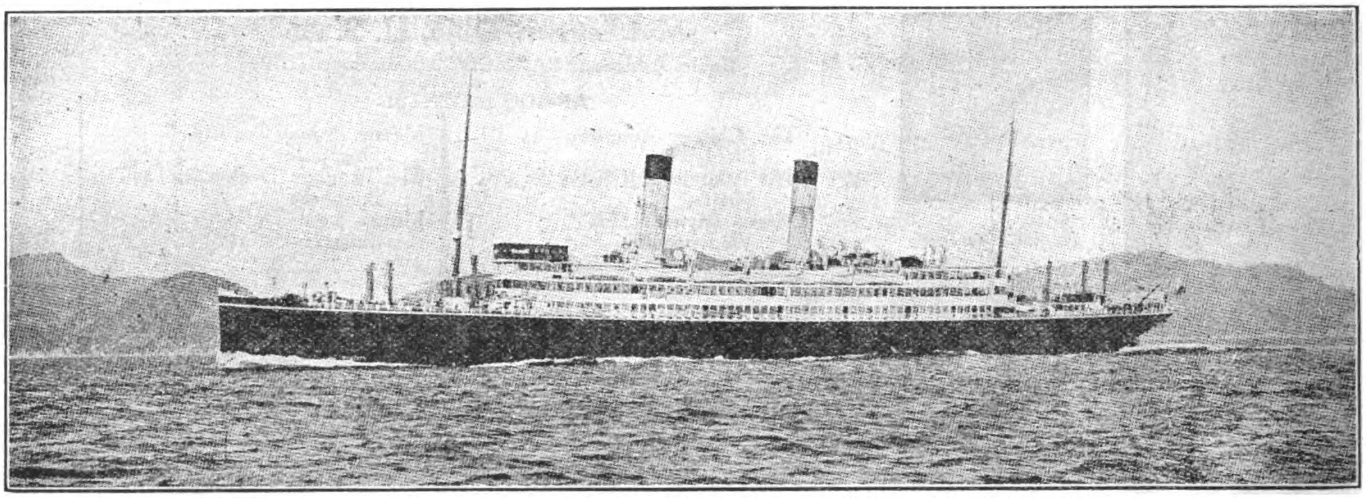
SAMPLES AND QUOTATIONS—C.I.F. ANY PORT ON APPLICATION



The *Tenyo Maru*, built and engined by the Mitsubishi Zosen Kaisha, Ltd., Nagasaki Works

MITSUBISHI ZOSEN KAISHA, LTD., NAGASAKI WORKS

(ex Mitsubishi Dockyard & Engine Works, Nagasaki)

	DOCK No. 1	DOCK No. 2	DOCK No. 3
Extreme Length	523 Ft.	371 Ft.	722 Ft.
Length on Blocks	513 ,,	360 ,,	714 ,,
Width of Entrance on Top	88 ,,	66 ,,	99½ ,,
,, ,, ,, ,, Bottom	77 ,,	53 ,,	88½ ,,
Water on Blocks at Spring Tide	26½ ,,	22 ,,	34½ ,,

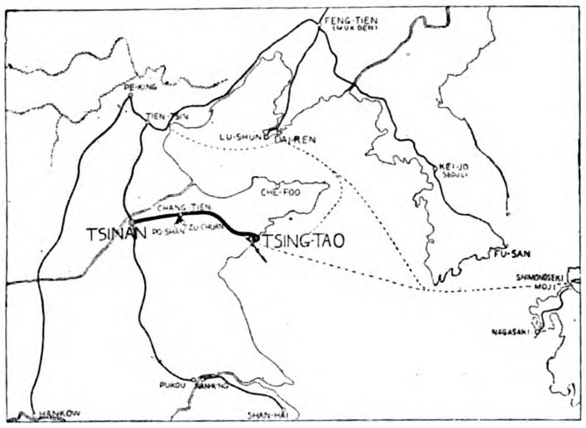
THE BEST EQUIPPED SHIPBUILDING PLANT IN THE FAR EAST

With Special Facilities for Handling the Heaviest Castings and the Repairing or Building of Ships, Engines, and Boilers
Also Electrical Work

LARGE STOCK OF MATERIAL AND FITTINGS ALWAYS ON HAND

SHANTUNG RAILWAY

The Shortest Route between Japan and North China



THROUGH TRAFFIC

Through passenger tickets are issued between the following principal stations of the Shantung Railway: Kiaochow, Kaomi, Fangtsu, Weihsien, Chingchow, Changtien, Chowtsun, Tsinan, Tzuchuan, Poshan, and the following points: In Manchuria—Port Arthur, Newchwang, Liaoyang, Fushun, Mukden, Tiehling, Kaiyuan, Changchun, Penchihu, Antung, and Dairen; in Japan—Yokohama, Nagoya, Yokkaichi, Osaka, Kobe, Ujina, Moji, Shimonoseki and Shanghai.

Steamer Connections—Steamers leave the wharves of the Large Harbour, Tsingtao, for Moji and Kobe every five days, for Shanghai about twice a week and for Dairen about three times a week.
For giving facilities to through passengers for Japan, a special train in connection with the night train No. 4 is operated from the Harbour Station to the Wharf, direct alongside the ship, on those days when the liners of the Nippon Yusen Kaisha, Osaka Shosen Kaisha, and Harada S.S. Co. are leaving.
Through passengers and their luggage are carried free of charge for this section.

Collieries—The Tzuchuan (Shisen) and Fangtzu (Boshi) Collieries are managed by the Mining Department of the Shantung Railway.
At present the daily output of Tzuchuan coal is about 1,500 tons, far surpassing the amount taken out when the Germans were in control. The coal is well-known for its good quality and fair price.

Tsinan—Tsinan, the capital of Shantung, is the western terminus of the Shantung Railway, and also one of the most important stations on the Tientsin-Pukow Railway.
The Tsinan Railway Hotel, furnished in modern European style, is found on the upper floor of the Tsinan Station, under the control of the Shantung Railway Administration.

THROUGH TRAIN SERVICE

Train No. 1 leaves Tsingtao daily 8.00 a.m. arrives Tsinan 6.30 p.m.
Train No. 3 leaves Tsingtao daily 7.00 p.m. arrives Tsinan 7.00 a.m.
Train No. 2 leaves Tsinan daily 9.00 a.m. arrives Tsingtao 7.30 p.m.
Train No. 4 leaves Tsinan daily 8.30 p.m. arrives Tsingtao 8.30 a.m.

Local Trains run between Tsingtao and Weihsien, Fangtzu and Tsinan, and on the Poshan and Tzuchuan colliery branches.

Fares—Tsingtao-Tsinan—1st class, $14.30 ; 2nd class, $7.20.

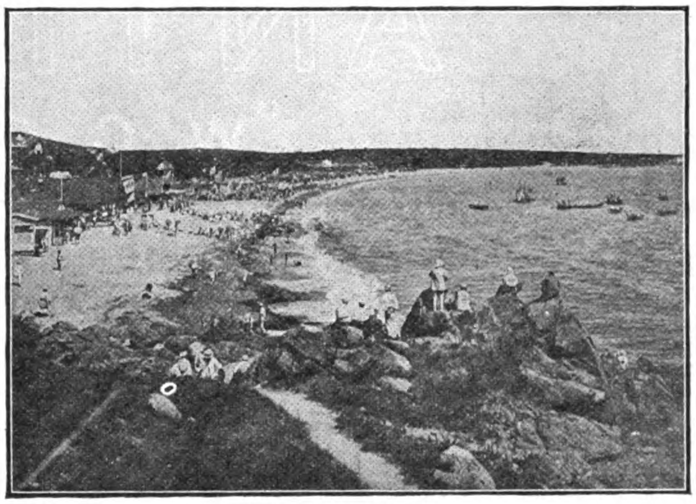
First Class Sleeping Car—A first-class sleeping car is attached to night trains Nos. 3 and 4 running between Tsingtao and Tsinan. For a berth in the sleeping car three yen in silver is charged in addition to the ordinary first-class fare, irrespective of distance.

Dining Car—A dining car is attached to through trains Nos. 1, 2, 3 and 4 running between Tsingtao and Tsinan. Meals are served to order at any time.

Ticket Agencies—The International Sleeping Car and Express Trains Co. and their Agents ; Messrs. Thos. Cook & Son and their branch offices in various parts of the world.

Connections at Tsingtao—By steamer with Japan, Manchuria and Shanghai.

Connections at Tsinan—By Tientsin-Pukow Line with Tientsin, 6.40 a.m. daily, and with Pukow, 8.15 p.m. daily.



BATHING BEACH, TSINGTAO.

Description of Tsingtao

Tsingtao is considered the most healthful place in all the Far East. The scenery including both mountains and sea, is most beautiful. There are quite extensive forest gardens, bits of woodland here and there, and many delightful shady lanes affording most interesting walks through them,

The roads are all broad, with very moderate gradients. They are of both macadamized and asphalt construction for vehicle traffic, while the sidewalks are either paved or concrete. These streets are practically all lined with beautiful shade trees.

The buildings are constructed principally in modern European style, with red tiles and white walls, contrasting pleasantly with the surrounding green mountains and blue sea.

The climate here is fine from Spring to Autumn, being neither too hot nor too cold. These climatic conditions make the place a favourite summer resort for Europeans and Americans from Shanghai, Tientsin, and other places.

The hotels are luxuriously furnished with up-to-date equipment and are under the efficient management of Mr. H. J. Hearne.

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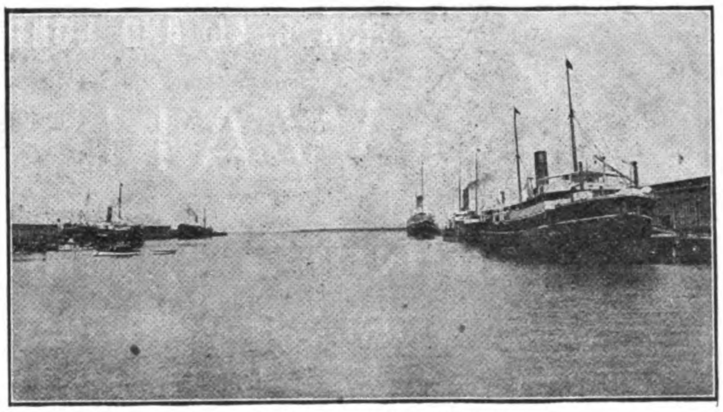

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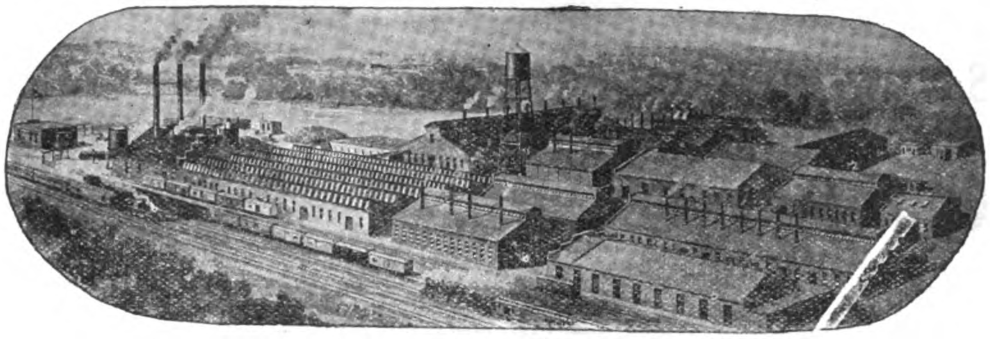

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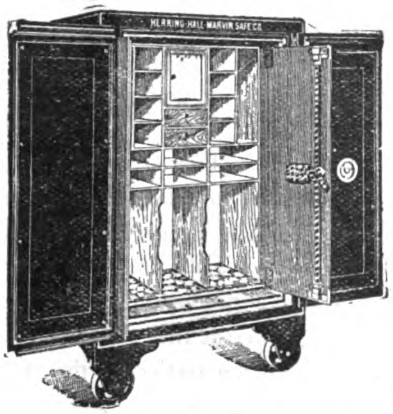

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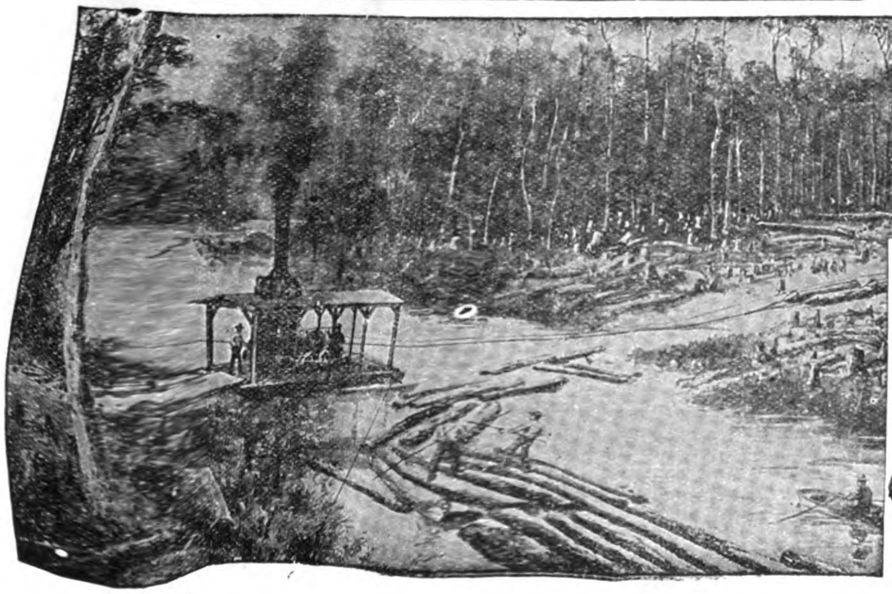

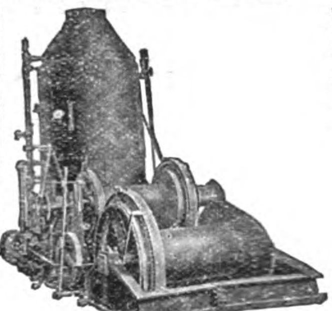

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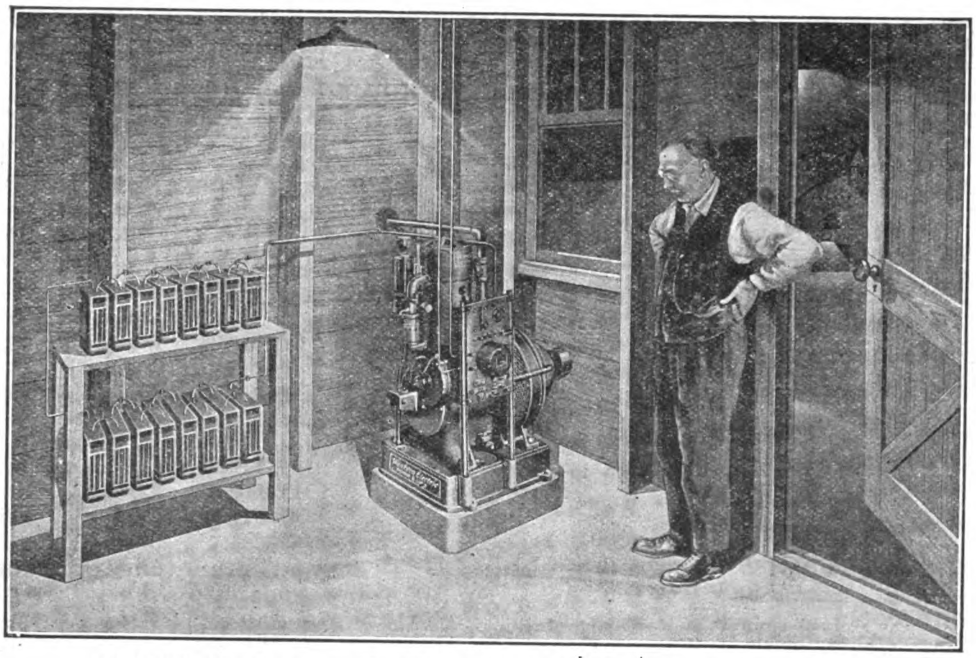

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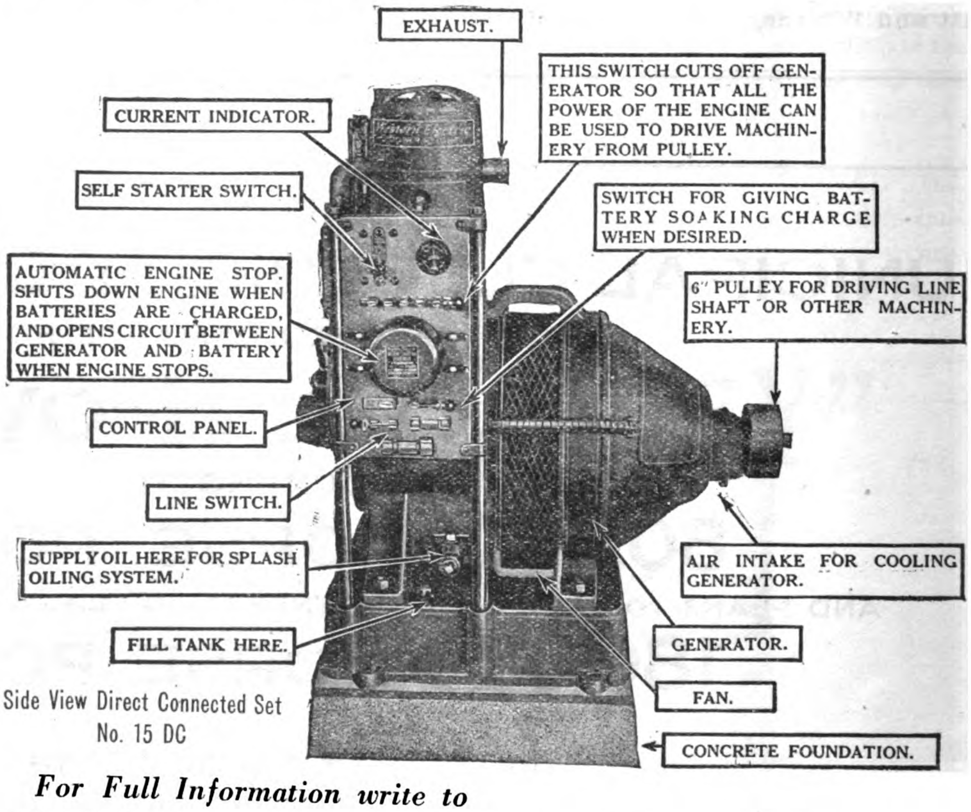

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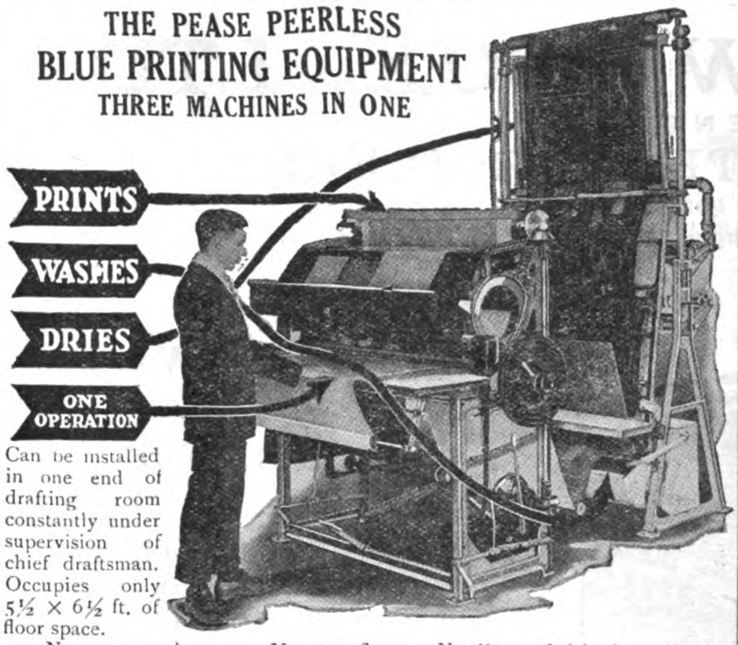

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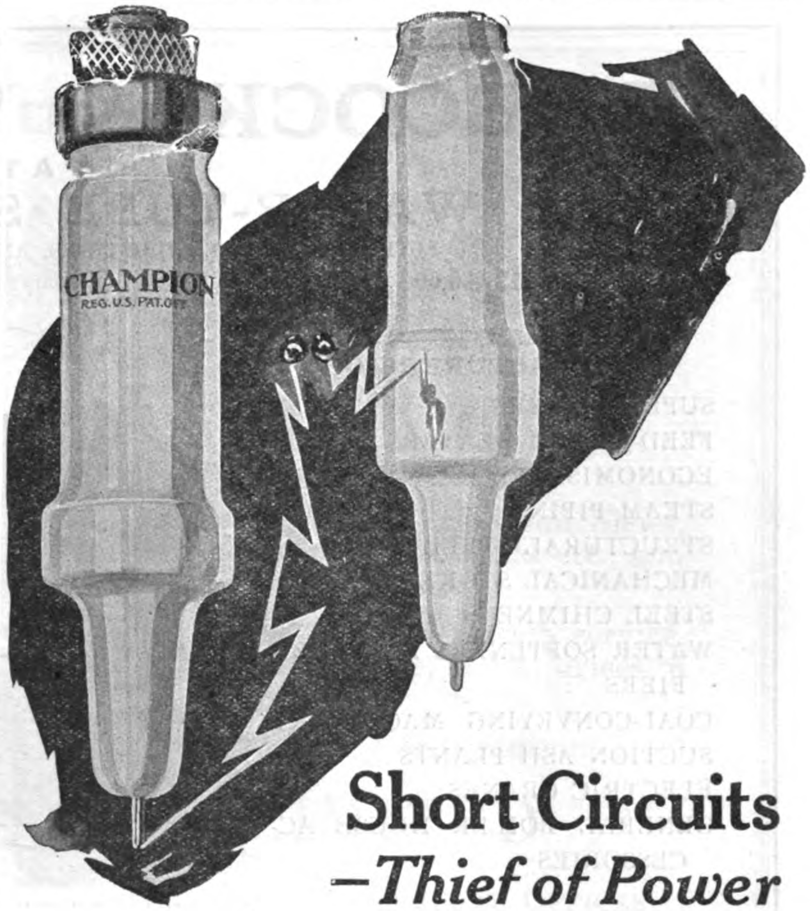

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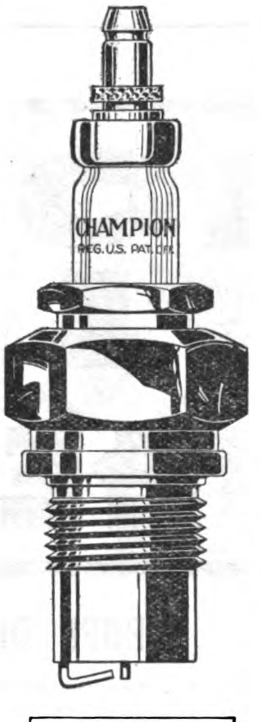

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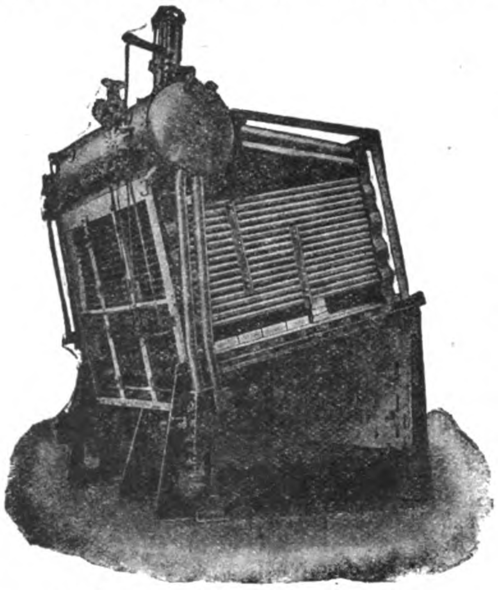

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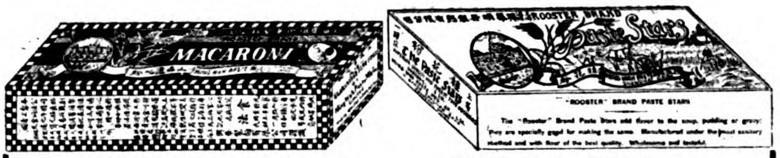

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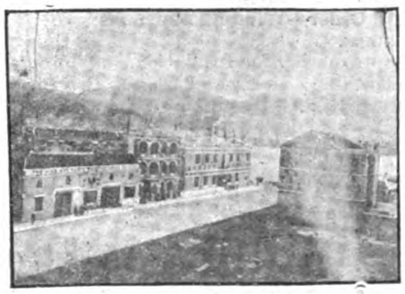

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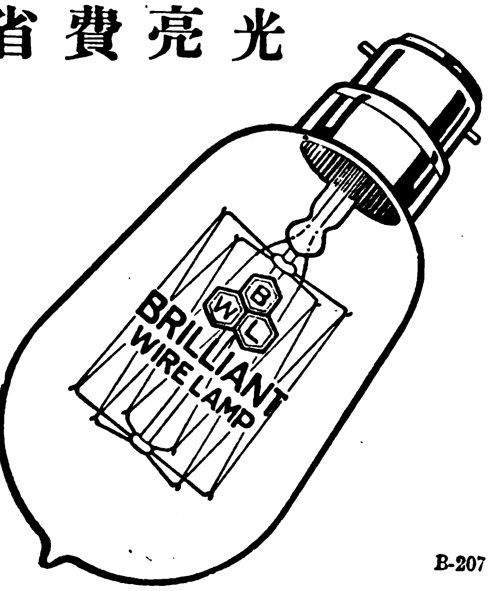

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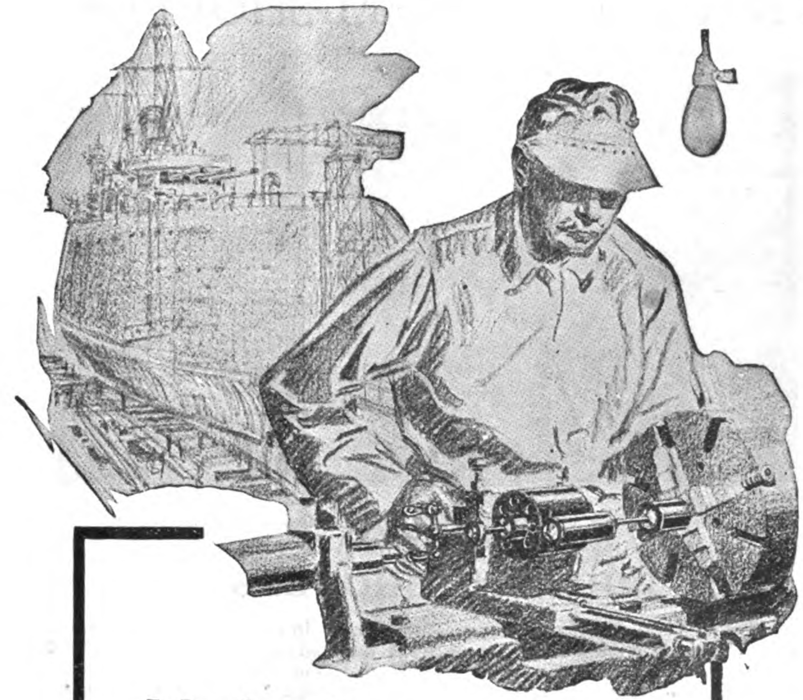

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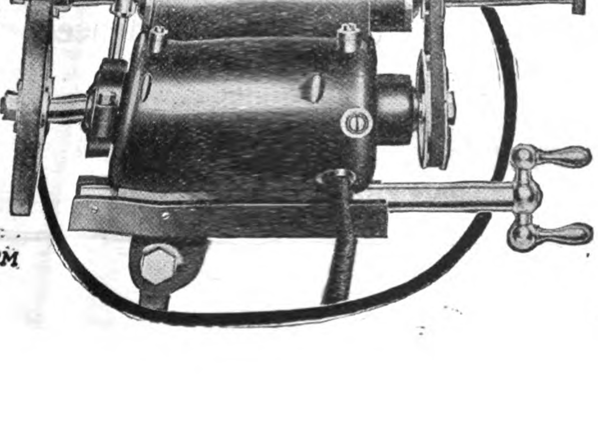

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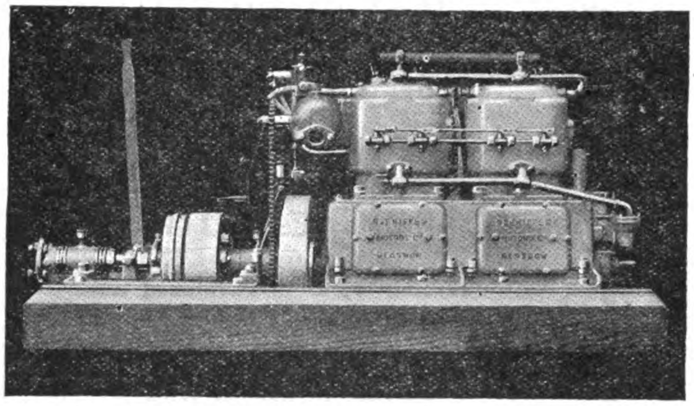

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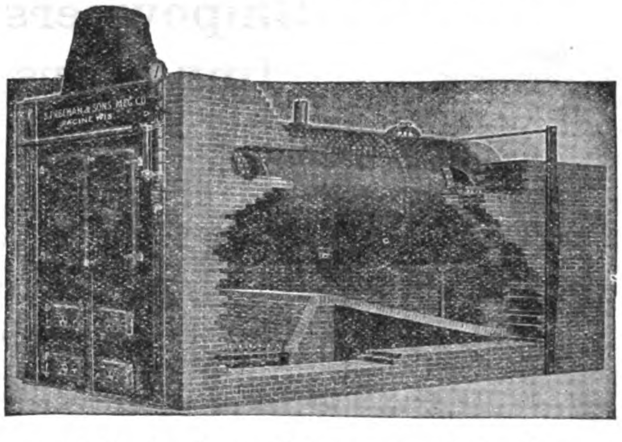

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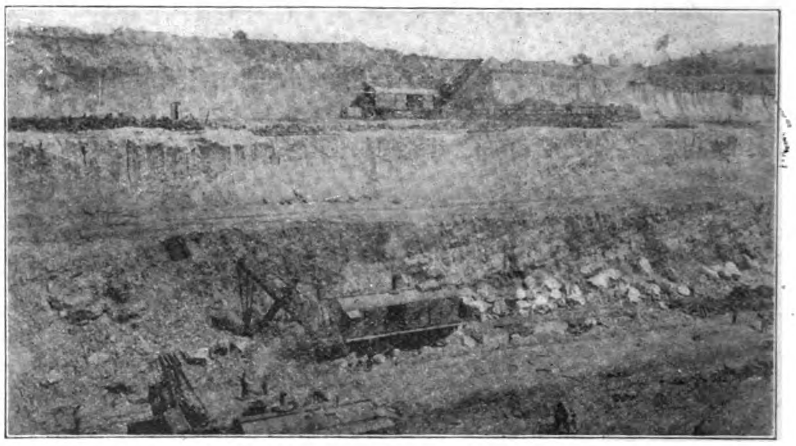

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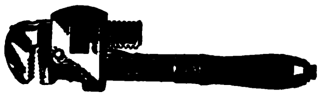

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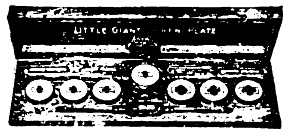

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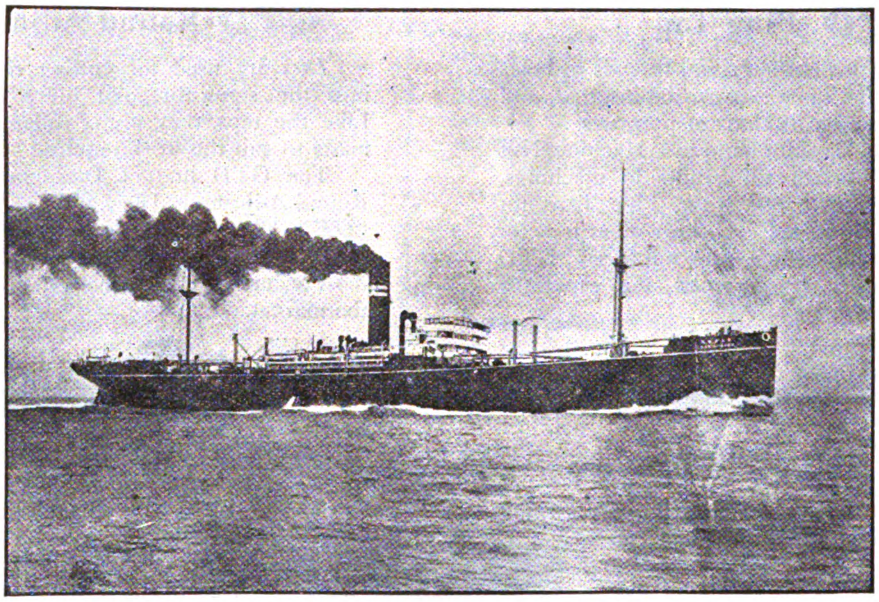

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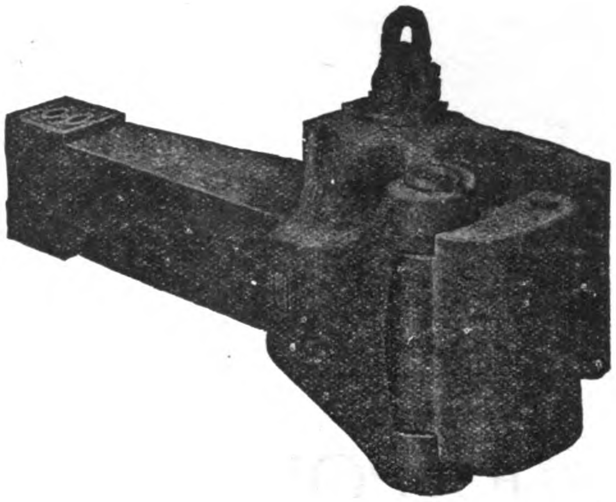

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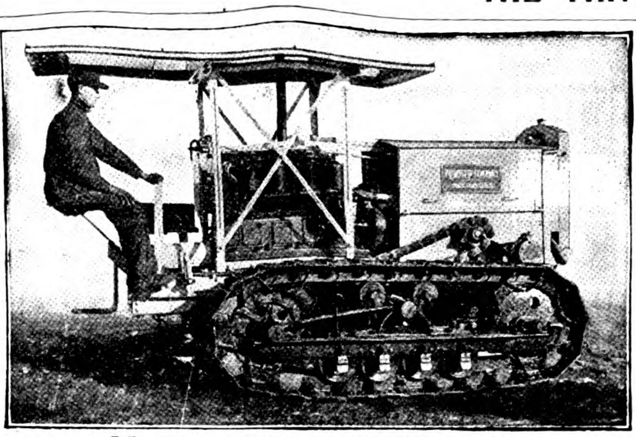

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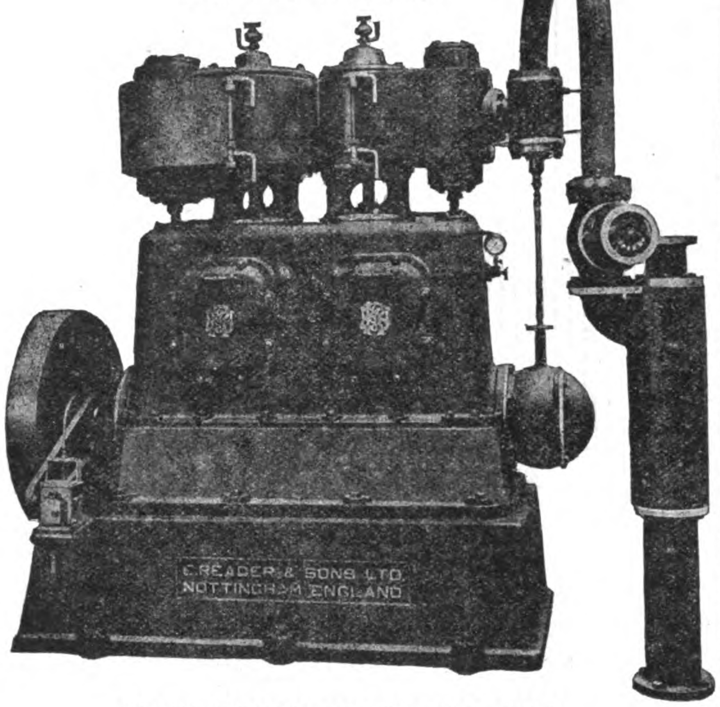

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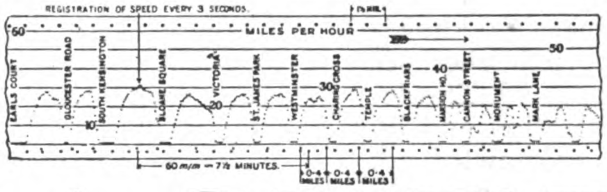

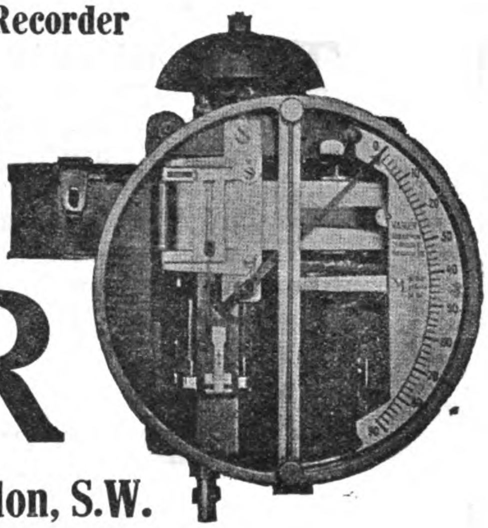

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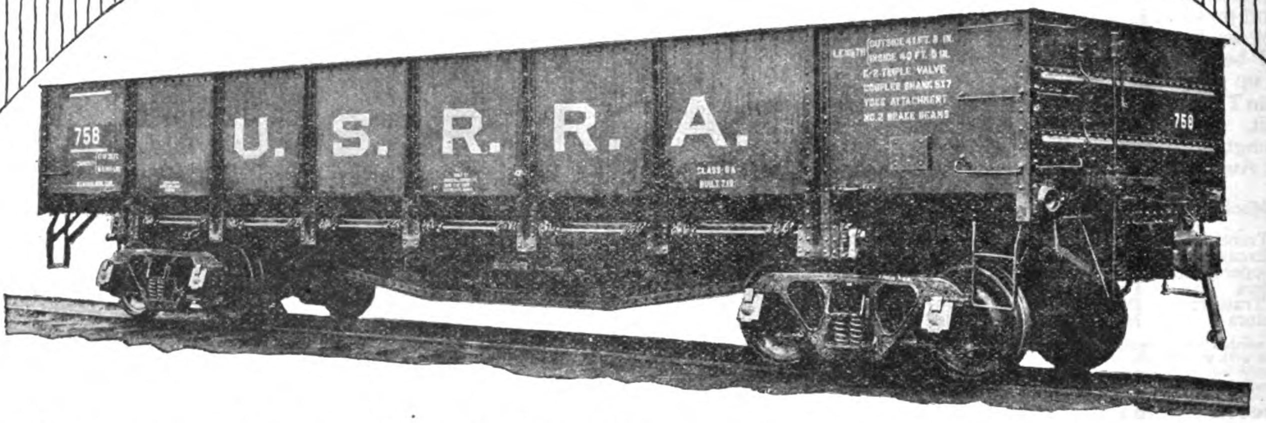

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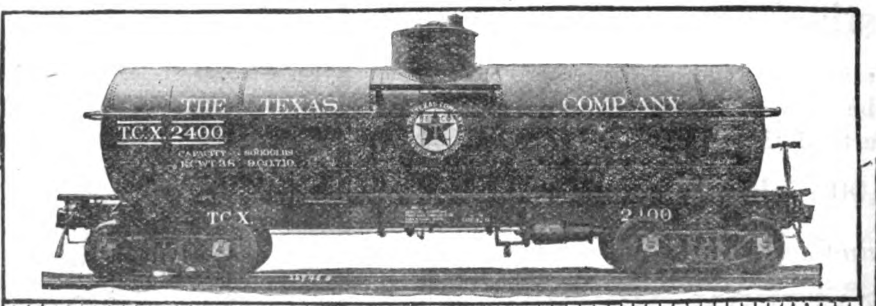

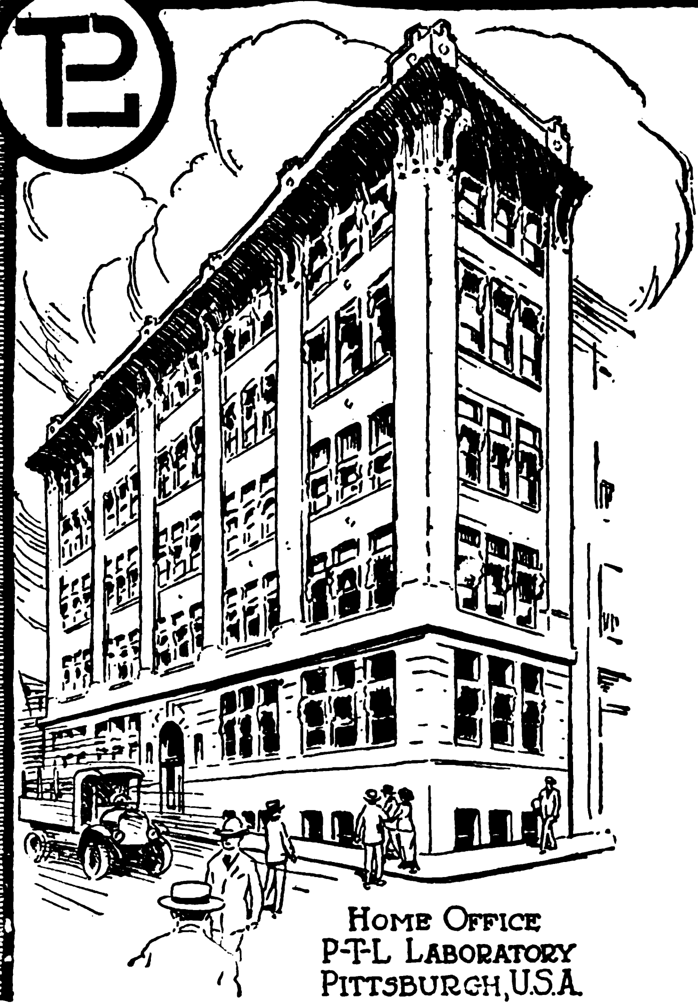

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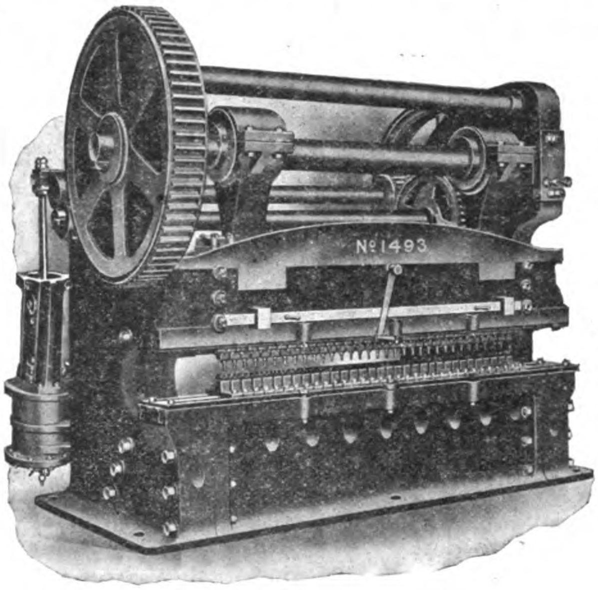

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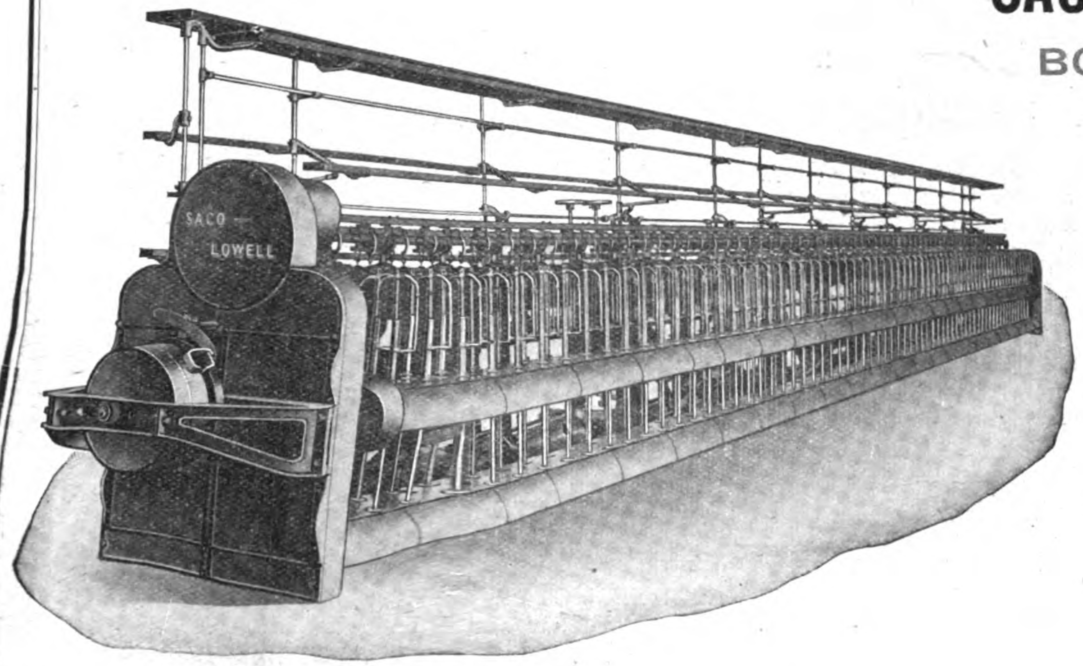

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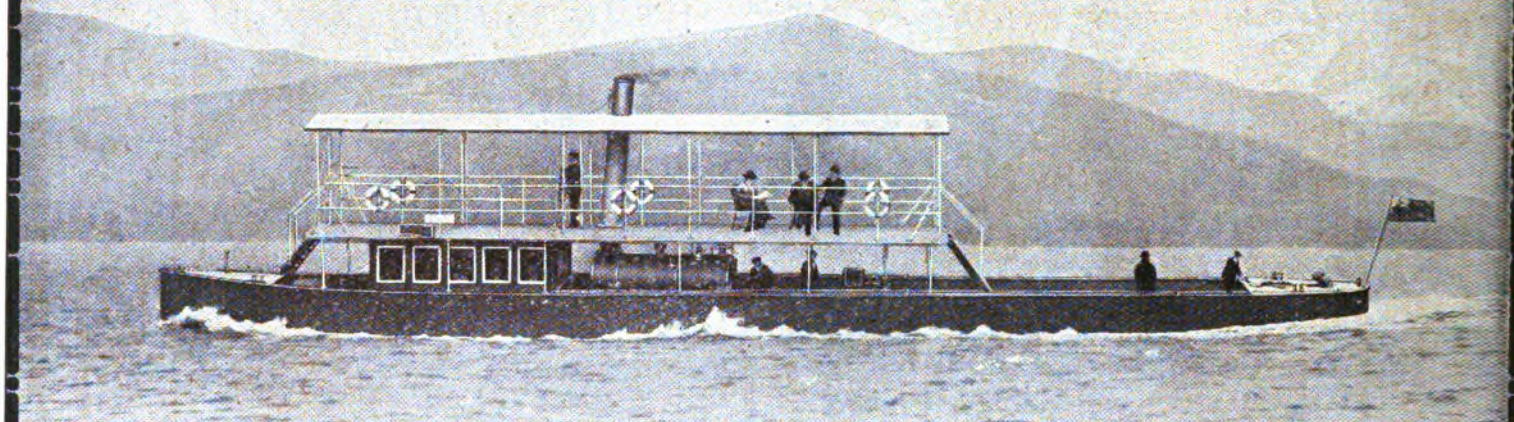

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THE PHILIPPINES

Historical.

Early Philippine history fades away into the history of Chinese foreign adventure and commerce, trading having been carried on between the two countries for a thousand years prior to the Spanish conquest.

Magallanes discovered the Philippines in 1521, about 100 years before the Pilgrim Fathers landed at Plymouth Rock. Spaniards settled Cebu, 1568. Legaspi occupied Manila, 1570. British captured Manila, 1762.

United States occupied Manila August 13, 1898. Treaty of Paris signed December 10, 1898. Filipino insurrection began February 4, 1899. First provincial government organized (Pampanga), February 6, 1901. First American Civil Governor, William H. Taft, July 1, 1901. Philippine Act passed July 1, 1902. Jones Act passed August 29, 1916.

Geography.

The Philippine Archipelago extends from the Batanes Islands in the north to the Tawitawi group at the southern end of the Sulu islands, a distance of 1,152 miles. The archipelago is composed of 3,141 islands, of which 400 are inhabited.

Area of Archipelago.

	Square miles.
Total area, land and water ...	832,968
Land	127,825
Water	705,115

Comparative Areas.

	Square miles.
Philippines	127,853
British Isles	120,973
New York, New Jersey, Pennsylvania, and Delaware ...	104,970
Japan	147,649

Luzon islands is as large as Denmark, Belgium, and Holland combined. Mindanao is about equal in area to Portugal.

Distribution of Area.

	Square miles.
Forest land	72,000
Commercial forest ...	61,000
Cultivated	14,000
Grass lands	20,000
Unexplored	14,000

Forest lands contain some 747 native tree species; 50 to the acre in some parts. Mindanao has 423 varieties. Over 200 varieties come to the Manila market. One-half of the forest land is virgin.

Cultivated Land.

	Acres.
Rice ...	3,000,000
Hemp ...	1,236,000
Coconuts ...	680,000
Corn ...	1,070,000
Tobacco ...	145,000
Sugar ...	445,000
Maguey ...	76,000
Cacao ...	2,600
Coffee ...	2,000

Comparative Cultivation.

Japan and the Philippines: Japan with 14,000,000 acres of arable land produces crops to the value of Ps.2,000,000,000. Philippines with 7,000,000 acres produces only Ps. 200,000,000.

Population.

Total from latest (1917-18) Philippine Health Service records: 9,500,000.

Christians ...	8,730,000
Mohammedans ...	275,000
Non-Christians and Pagans ...	595,000
Japanese ...	42,800,000

Progress of Population.

1735 ...	837,182
1805 ...	1,741,234
1826 ...	2,593,287
1840 ...	3,096,031
1862 ...	4,734,633
1887 ...	5,984,727
1896 ...	6,261,339
1917-18 ...	9,500,000

Climate.

Average temperature for 30 years: 80° Fahrenheit.

Dry temperate months: November, December, January, and February.

Intermediate months: March, July, August, September, October.

Hot months: May and June.

Rainfall.

Maximum days of rain in July, August, September.

Minimum days of rain in February and March.

Dry season: November to May, inclusive.

Wet season: June to October, inclusive.

Typhoons: Frequent in July, August, September, and October.

Mountains.

	Feet.
Apo ...	10,312
Pulog ...	9,450
Mayon ...	8,970
Halcon ...	8,865
Malindang ...	8,197
Canlaon ...	8,192
Ste. Tomas ...	7,418
Data ...	7,364
Banajao ...	7,382
Pagsan ...	7,339
Isarog ...	6,450
Pinalobo ...	6,137
Cristobál ...	5,288
Bulusan ...	5,100
Maquiling ...	4,783
Arayat ...	3,564
Talim ...	1,519
Taal ...	1,050

There are 50 volcanoes in the archipelago, of which 20 are active and 30 are extinct.

The principal active volcanoes are Taal, Canloan, and Apo.

The principal extinct volcanoes are Talim, Maquiling, Cristobal, Banajao, and Isarog.

Rivers.

	Miles
Grande de Pampanga ...	220
Pulangi, Mindanao ...	300

Other rivers of importance are the Agno Grande, Grande de Pampanga, Agusan, and Pasig.

Mindoro has 60 rivers and Samar 26, none of them of commercial value.

Real Estate Values.

[1 peso=$0.50].

Manila ...	Ps.104,024,000
Provinces ...	392,180,000

Mortality (Americans and Europeans) per 1,000 (1917-18).

Manila ...	8.0
New York ...	16.5
San Francisco ...	15.0
Chicago ...	14.0
Glasgow ...	18.0
Belfast ...	22.0

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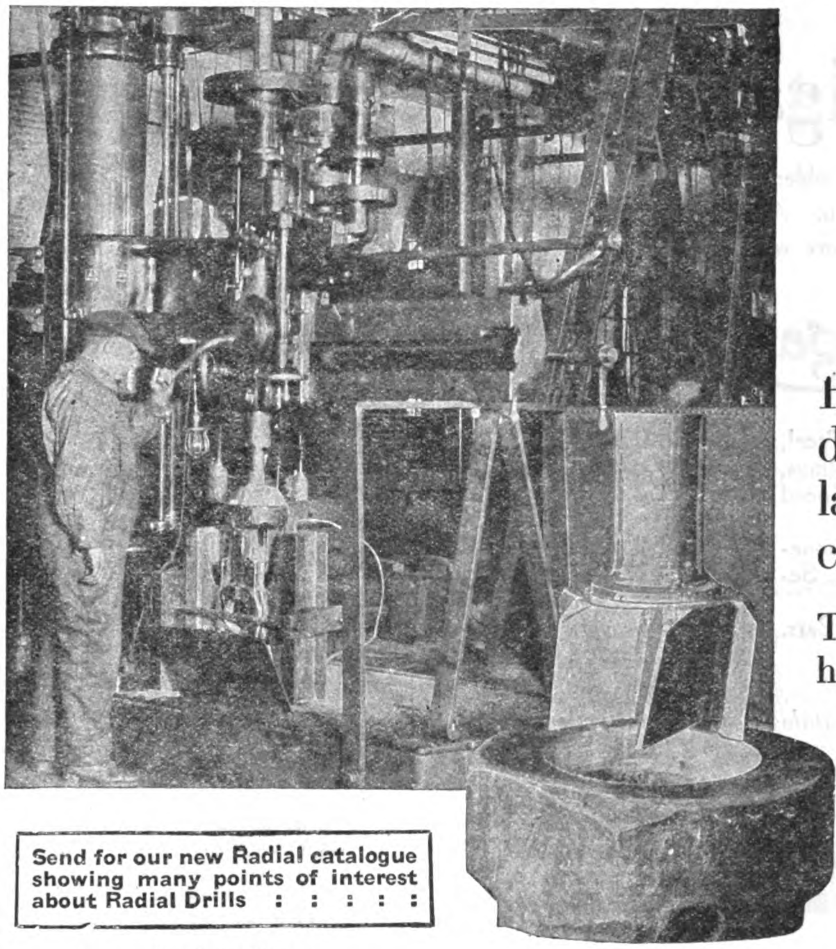

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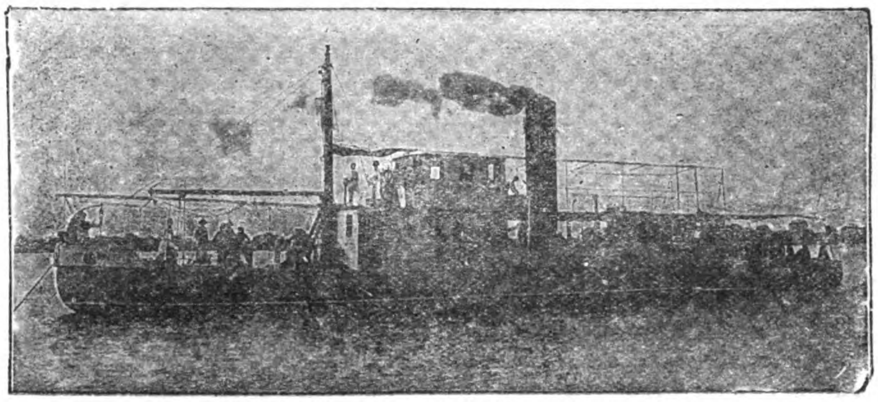

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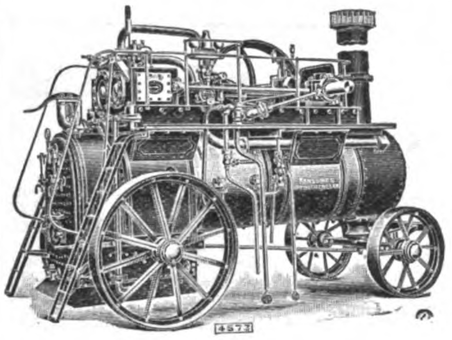

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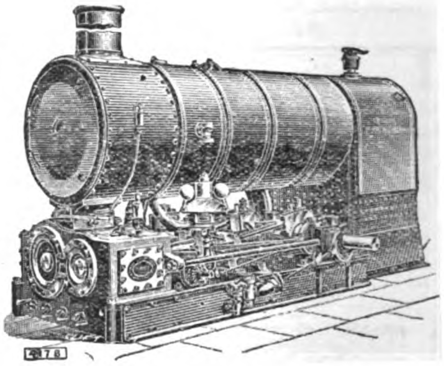

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- **JAPAN:** Tokyo (General Manager's Office), Kobe, Osaka, Yokohama.
- **TAIWAN:** Keelung, Tainan, Takow, and 10 other points.
- **CHINA:** Amoy, Canton, Foochow, Hankow, Kiukiang, Shanghai, Swatow.
- **OTHERS:** Batavia, Bombay, Hongkong, London, New York, Semarang, Singapore, Soerabaya.

AGENTS AND CORRESPONDENTS: In the Principal Cities and Towns throughout the World.

London Bankers:

London County Westminster and Parr's Bank, Ltd. Capital & Counties Bank, Ltd. London Provincial and South Western Bank, Ltd.

Tokyo Branch: No. 1 Eiraku-cho Ni-chome, Kojimachi-ku.

Telegraphic Address: "TAIWANGINK." Phone Nos. 5060, 5061, 5062, 5063, 5064, 5065, & 5066, Honkyoku.

Interest allowed on Fixed Deposits and Current Accounts on terms which may be ascertained on application. Most favourable terms are granted for Petty Current Accounts. Every description of Exchange and General Banking business transacted.

Special facilities for exchange business on China, Straits Settlements, East Indies, Australia, Great Britain, Russia, America, Canada, South Africa, etc.

K. YAMANARI, *General Manager.*

Hongkong and Shanghai Banking Corporation

Paid-up Capital	... ...	$15,000,000
Reserve Funds: Sterling	... ...	£1,500,000
Silver	... ...	$23,000,000
Reserve Liability of Proprietors	... ...	$15,000,000

Court of Directors:

Hon. Mr. E. V. D. PARR, Chairman
A. H. COMPTON, Esq. Deputy Chairman
J. W. C. BONNAR, Esq.
G. M. DODWELL, Esq.
C. S. GUBBAY, Esq.
P. H. HOLYOAK, Esq.
Hon. Mr. J. JOHNSTONE
W. L. PATTENDEN, Esq.
J. A. PLUMMER, Esq.
ROSS THOMSON, Esq.

Head Office:
HONGKONG

Chief Manager:
HONGKONG . . N. J. STABB

London Bankers:
LONDON COUNTY WESTMINSTER AND PARR'S BANK LTD.

Shanghai Branch: 12 The Bund
Sub-Agency: 9 Broadway

Branches and Agencies:

AMOY	MALACCA
BANGKOK	MANILA
BATAVIA	NAGASAKI
BOMBAY	NEW YORK
CALCUTTA	PEKING
CANTON	PENANG
COLOMBO	RANGOON
FOOCHOW	SAIGON
HANKOW	S. FRANCISCO
HARBIN	SHANGHAI
ILOILO	SINGAPORE
IPOH	SOURABAYA
JOHORE	TIENTSIN
KOBE	TSINGTAO
KUALA LUMPUR	VLADIVOSTOCK
LONDON	YOKOHAMA
LYONS	

Interest allowed on Current Accounts and on Fixed Deposits according to arrangement.

Local Bills Discounted. Credits granted on approved Securities and every description of Banking and Exchange business transacted. Drafts granted on London and the chief commercial places in Europe, India, Australia, Africa, China, Japan and America.

G. H. STITT, *Acting Manager.*

Banque Industrielle de Chine

CAPITAL............Francs 75,000,000, one-third of the Capital, i.e., Frs. 25,000,000, subscribed by

THE GOVERNMENT OF THE CHINESE REPUBLIC

Statutes approved by the Government of the Chinese Republic on January 11, 1913.

President: ANDRE BERTHELLOT.
General Manager: A. J. PERNOTTE.

HEAD OFFICE:
74 RUE ST. LAZARE, PARIS.

Branches in Peking, Tientsin, Shanghai, Hongkong, Canton, Foochow, Saigon, Haiphong and Yunanfou

Bankers:

In France: Societe Generalle pour Favoriser le Development du Commerce et de l'Industrie en France.
In London: London City & Midland Bank Ltd.
In New York: Redmond & Co.
In Italy: Banca Commerciale Italiana Credito Italiano

Taels, Dollars, Gold Accounts

Interest allowed on Current Accounts in Gold or Local Currency and fixed deposits on application.

Every description of Banking and Exchange business transacted.

Savings accounts in Gold and Local Currency.

RUSSO-ASIATIC BANK

CAPITAL (fully paid)	... ...	**Roubles 55,000,000**
RESERVE FUND	... ...	**„ 26,960,000**
Capital contributed by the Chinese Government	...	**Kuping Tls. 3,500,000**
Reserve Fund	... ...	**„ 1,750,000**

Head Office: PETROGRAD
Paris Office: 9 RUE BOUDREAU
London Office: 64 OLD BROAD STREET, E.C. 2.

Bankers:

LONDON: Messrs. Glyn, Mills, Currie & Co.
PARIS: Société Générale pour favoriser le développement du Commerce et de l'Industrie en France.
Banque de Paris et des Pays-Bas.
LYONS: Société Générale pour favoriser le développement du Commerce et de l'Industrie en France.
MILAN: Credito Italiano.

Far Eastern Branches:

BOMBAY	HARBIN	SHANGHAI
CHANGCHUN (KWANCHENZE)	HONGKONG	TIENTSIN
CHEFOO	MANCHOULI	VLADIVOSTOCK
DAIREN (DALNY)	NEWCHWANG	YOKOHAMA
HAILAR	NICOLAYEWSK o/AMUR	
HANKOW	PEKING	

Branches and Agencies in Russia, Siberia and Mongolia.

Shanghai Branch:

Interest allowed on Current Accounts and Fixed Deposits in Taels, Dollars and Roubles. Terms on application.
Local Bills discounted. Special facilities for Russian Exchange.
Foreign Exchange on the principal cities of the world bought and sold.

SAFE DEPOSIT BOXES.

L. JEZIERSKI, S. JASTRZEMBSKI, } *Managers for Branches in Asia.*

BANK OF COMMUNICATIONS

(Specially authorised by Presidential Mandates of April 7th, 1914 and October 31st, 1915 making the Bank of Communications a National Bank).

Head Office: Peking

CAPITAL . . Kuping Tls. 10,000,000

President: TSAO JOU LIN

Vice-President: JEN FUNG PAO

Every description of Banking and Exchange business transacted.
Interest allowed on Current Accounts and Fixed Deposits according to arrangement.
Credits granted on approved Securities.
Special Facilities for Transfers to all parts of China.

Branches

CHIHLI PROVINCE.—Peking, Tientsin, Tungchow, Paotingfu, Haitien, Tangshan, Shuntefu, Shengfang.

SHANTUNG PROVINCE.—Tsinanfu, Tsininchow, Chefoo, Techow, Tsaochwang, Lungkow.

HONAN PROVINCE.—Kaifeng, Lohyang, Chengchow, Chiaotso, Chowchiakow, Taokow, Leiho, Hsinhsiang, Changtefu, Hsinyangchow.

SHANSI PROVINCE.—Shihchiachwang, Tatungfu, Fengcheng, Yangkao.

KIANGSU PROVINCE.—Shanghai, Soochow, Wusieh, Chinkiang, Yangchow, Tsing-kiangpu, Pukow, Penpu, Hsuchow.

CHEKIANG PROVINCE.—Hangchow, Ningpo.

HUPEH PROVINCE.—Hankow, Shasi, Ichang.

KIANGSI PROVINCE.—Kiukiang.

HUNAN PROVINCE.—Changsha, Changteh, Yochow, Hengchow, Hsiangtan.

SZECHUAN PROVINCE.—Chungking.

ANHWEI PROVINCE.—Wuhu, Anking, Hsuancheng, Panpu.

KWANGTUNG PROVINCE.—Canton.

THREE EASTERN PROVINCES.—Yinkow, Fengtien, Changchun, Kirin, Tiehling, Sunchiatai, Liaoyang, Harbin, Chinhsien.

SPECIAL DISTRICTS.—Jehol, Kueihuacheng, Lenghsien, Chihfeng, Hsinsi, Kalgan (Chahar).

ABROAD.—Hongkong, Singapore.

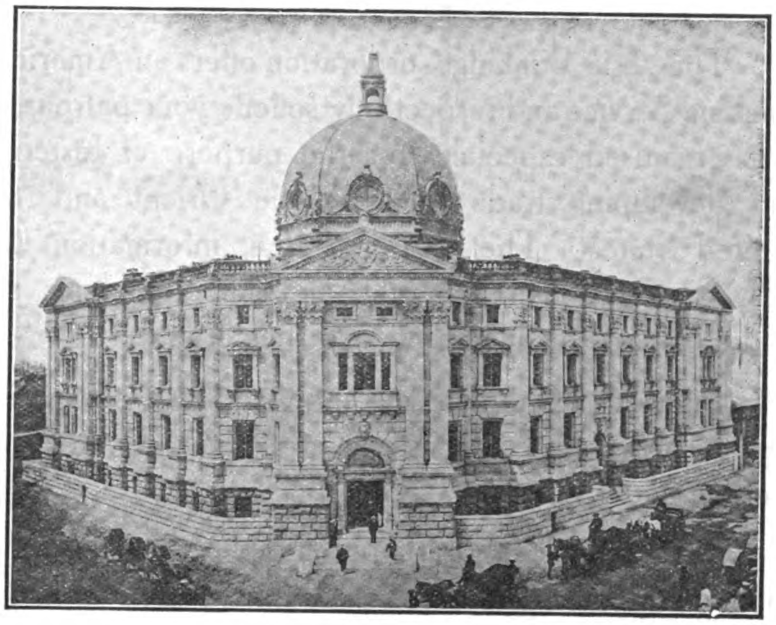
The Yokohama Specie Bank, Limited

Capital subscribed . . Yen 100,000,000. Capital paid-up . . Yen 61,000,000. Reserve Fund . . Yen 44,000,000

President:
N. KAJIWARA, Esq.

Vice-President:
S. K. SUZUKI, Esq.

Directors:
N. Kajiwara, Esq.
N. Soma, Esq.
Y. Yamakawa, Esq.
M. Odagiri, Esq.
Baron K. Iwasaki.
K. Tatsumi, Esq.
S. K. Suzuki, Esq.
F. Watanabe, Esq.
I. Matsukata, Esq.
M. Mitsui, Esq.
K. Morimura, Esq.
R. Ichinomiya, Esq.
K. Kodama, Esq.
T. Takeuchi, Esq.



General Manager:
S. K. Suzuki, Esq.

HEAD OFFICE, YOKOHAMA

Manager:
Taro Hodsumi, Esq.

SHANGHAI BRANCH

31 The Bund.

Director and Manager:
K. Kodama, Esq.

BRANCHES AND AGENCIES

Batavia
Bombay
Buenos Aires
Calcutta
Changchun
Chinan Fu
Dairen
Fengtien
Hankow
Harbin
Hongkong
Honolulu
Kaiyuang
Kobe
London
Los Angeles (sub-office of San Francisco Branch)
Lyons
Manila
Nagasaki
Newchwang
New York
Osaka
Peking
Rangoon
Rio de Janeiro
San Francisco
Seattle
Shanghai
Shimonoseki
Singapore
Soerabaya
Sydney
Tientsin
Tsingtau
Tsinan
Vladivostock

Correspondents at all the Chief Commercial Cities in the World.

LONDON BANKERS:

LONDON COUNTY WESTMINSTER & PARR'S BANK LTD.
LONDON PROVINCIAL & UNION BANK OF ENGLAND LTD.
LONDON JOINT STOCK BANK LTD.

Interest allowed on Current Accounts and Fixed Deposits on terms to be ascertained on application.
Every description of Banking business transacted. For particulars, apply to the Managers.

Asia Banking Corporation

An American Bank

The Asia Banking Corporation offers an American Banking Service and respectfully solicits your patronage. It is organised especially for the purpose of fostering and developing trade between the Orient and the United States. The entire service, information and TIME of our bank, its staff and correspondents are at the disposal of our clients and their friends.

Interest allowed on current, fixed and saving accounts carried in Taels, Mexican Dollars, U.S. Gold, Sterling and Francs.

Foreign or local drafts purchased at best rates, or entered for collection.

Imports and exports financed.

Drafts sold on, and telegraphic payment effected in, any part of the World.

Head Office: New York City
Head Office for Far East: Shanghai

Other Branch Offices at Canton, Changsha, Hankow, Hongkong, Manila, Peking, Tientsin.

PARK-UNION

FOREIGN BANKING CORPORATION

HEAD OFFICE: 56 Wall Street, New York

Fully Paid Capital and Surplus $2,250,000

Owned and Controlled by

The National Park Bank, New York

Union Bank of Canada

Directors:

Richard Delafield	H. B. Shaw
Stuyvesant Fish	R. O. McCulloch
Gilbert G. Thorne	Stanley E. Elkin
Cornelius Vanderbilt	Stephen Haas
R. H. Williams	F. E. Kenaston
E. C. Hoyt	W. J. Dawson
A. P. Villa	F. L. Appleby
Sir Wm. Price	T. Fred Aspden

Charles A. Holder, *President*

Branches:

SAN FRANCISCO SEATTLE

PARIS TOKYO YOKOHAMA

Shanghai Branch:

No. 1 KIUKIANG ROAD

Telephone Central 1174

THE ROYAL BANK OF CANADA

HEAD OFFICE, MONTREAL.

LONDON, ENG. PRINCES ST., E.C.

NEW YORK. 68, WILLIAM ST.

PARIS, FRANCE. THE ROYAL BANK OF CANADA (FRANCE)

BARCELONA. PLAZA DE CATALUNA 6

630 BRANCHES.

555 Branches in Canada and Newfoundland, also

75 FOREIGN BRANCHES.

ARGENTINE Buenos Aires. **BRAZIL** Rio de Janeiro, Santos, Sao Paulo. **URUGUAY** Montevideo.

VENEZUELA Caracas, Ciudad Bolivar. Maracaibo, Puerto Cabello. **COLOMBIA** Barranquilla. **COSTA RICA** San José.

WEST INDIES

CUBA—Havana (5 Branches), Antilla, Banes, Bayamo, Caibarien, Camaguey, Camajuani, Cardenas, Ciego de Avila, Cienfuegos, Cruces, Cueto, Florida, Guantanamo, Jatibonico, La Maya, Manzanillo, Matanzas, Moron, Nuevitas, Palma Soriano, Pinar del Rio, Puerto Padre, Sagua la Grande, Sancti Spiritus, Santa Clara and Santiago de Cuba.

PORTO RICO—San Juan, Mayaguez and Ponce. **HAITI**—Port-au-Prince.

DOMINICAN REPUBLIC—S. Domingo, Puerto Plata, Sanchez, S. Pedro de Macoris and Santiago de los Caballeros.

MARTINIQUE—Fort de France.

GUADELOUPE—Pointe-à-Pitre and Basse Terre.

BRITISH WEST INDIES— Antigua, Bahamas, Barbados, Dominica, Grenada, Jamaica, Montserrat, Nevis, St. Kitts, Trinidad and Tobago.

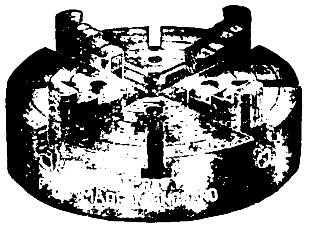
BRITISH GUIANA—Georgetown, New Amsterdam, &c.

BRITISH HONDURAS—Belize.

CAPITAL PAID UP & RESERVES $35,000,000
TOTAL RESOURCES OVER - - $500,000,000

PRATT CHUCKS

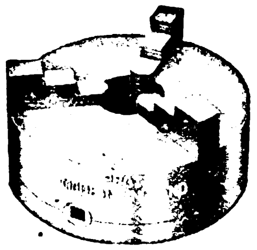
MADE IN ENGLAND



INDEPENDENT 4-JAW CHUCKS

Reversible Jaws and Solid Bodies.
Screws have Double-Thrust Bearings
(10 inch size and upwards)

STANDARD SIZES: 4½, 5, 6, 8, 9, 10, 12, 14, 15, 16, 17, 18, 20, 22, 24, 26, 28, and 30 inches diam.



3-JAW GEARED SCROLL CHUCKS

SELF-CENTRING

Sizes in Progress:
5, 6, 7½, 9 and 10½ inches diam.
Full range of sizes to follow.

PRICE LISTS ON APPLICATION

MANUFACTURED BY

F. PRATT & CO., LTD.,

Eagle Iron Works, **HALIFAX,** England

London Offices:

7 LAURENCE POUNTNEY HILL, E.C.4.

EXPORT ORDERS THROUGH USUAL MERCHANTS AND SHIPPERS.

GASTON, WILLIAMS & WIGMORE,

FAR EASTERN DIVISION, INC.,

Cable Address **Shanghai and Tientsin** Gastonorge

IMPORTERS EXPORTERS ENGINEERS CONTRACTORS

Head Office: 39 BROADWAY, NEW YORK

AGENTS FOR

ADAMS MANUFACTURING CO.
Road graders and other road building equipment.

AMERICAN HOIST & DERRICK CO.
Builders hoists, derricks and other hoisting equipment.

BALL ENGINE CO.
"Erie" steam shovels and locomotive cranes.

BECKER MILLING MACHINE CO.
Vertical and horizontal milling machines.

BLAW-KNOX CO.
Clam shell buckets, steel forms for concrete construction and other steel products.

BRADFORD BELTING CO.
Leather belting.

H. BRINTON CO.
Superior knitting machinery.

CEMENT GUN CO.
Cement guns.

CHAIN BELT CO.
Rex concrete mixers, chains, conveyers, etc.

CLEVELAND PUNCH & SHEAR WORKS
Plate bending rolls, punches, shears, etc.

GIDDINGS & LEWIS MFG. CO.
Horizontal boring, drilling and milling machines.

GOODYEAR TIRE & RUBBER CO.
Motor car tires, belting, packing, steam hose, mill hose, etc.

GRATON & KNIGHT CO., THE
Tanners of leather and manufacturers of leather belting and leather products.

HYDRAULIC PRESS MANUFACTURING CO.
Hydraulic presses.

INSLEY MANUFACTURING CO.
Concrete towers and chutes, mining cars, etc.

MUNCIE OIL ENGINE CO.
Crude oil semi-diesel type engines.

NORTH-WESTERN EXPANDED METAL CO.
Expanded metal for reinforced concrete construction.

NOVO ENGINE CO.
Gasoline and kerosene engines and outfits.

OHIO MACHINE TOOL CO.
Planers and shapers.

PAWLING & HARNISCHFEGER CO.
Excavating and trenching machinery and overhead electric travelling cranes.

READ-PRENTICE CO.
Lathes, drilling machines and grinders.

TOCH BROS.
Damp resisting and anti-corrosive paints.

WESTERN MACHINE TOOL WORKS
Radial drills

WHITIN MACHINE WORKS
America's best cotton machinery.

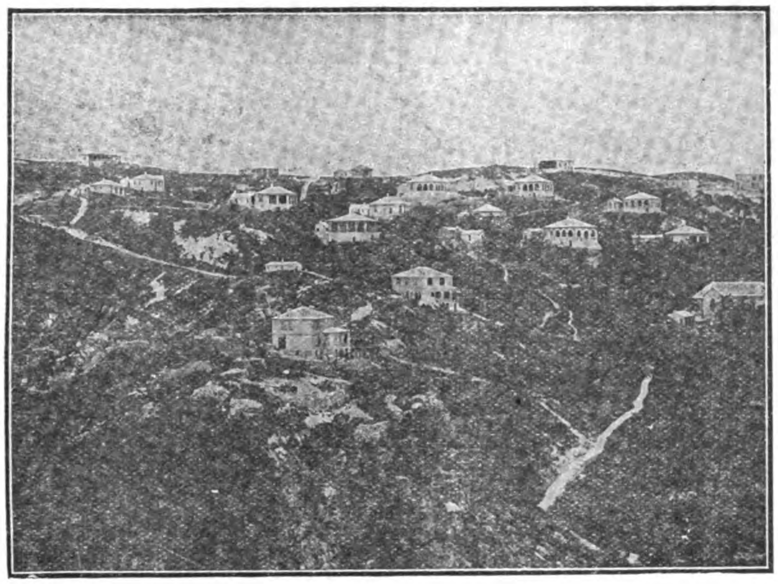
And a long list of other equally prominent manufacturers whose products are required in the Industrial Development of China.

GASTON, WILLIAMS & WIGMORE, ELECTRICAL ENGINEERING CORPORATION

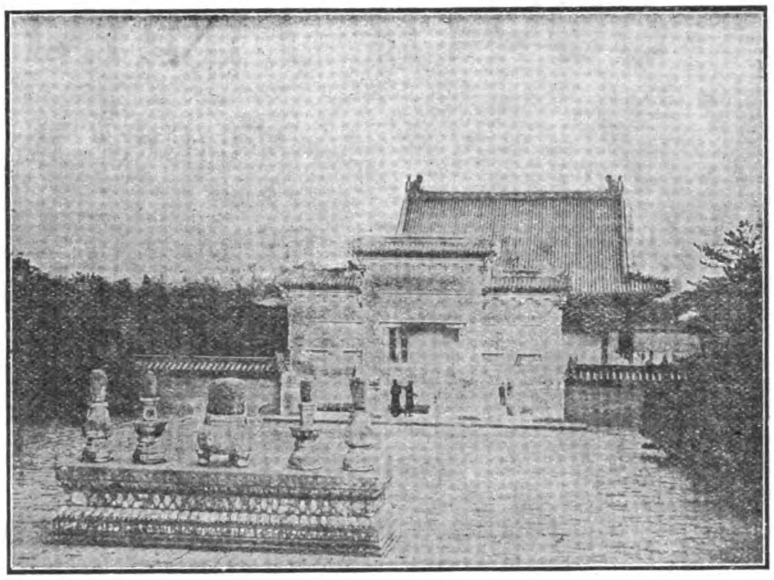
China Agents for
WESTINGHOUSE ELECTRIC INTERNATIONAL COMPANY

Complete Electrical and Steam Equipments for all purposes. "The name Westinghouse is a Guarantee."

CHINESE GOVERNMENT RAILWAYS



SUMMER RESORT AT CHI KUNG SHAN



TOMB OF EMPEROR YU CHENG NEAR LIANG KOW CHWANG

PEKING-HANKOW LINE

"The Road Through The Heart of China"

THE Peking-Hankow Line, the most important section of China's overland route, enables tourists and travellers to get a glimpse of Old China, the train passing through magnificent scenery, traversing the great plains of Chihli, the central portion of Honan and the mountainous regions of the eastern Hupeh province.

The Peking-Hankow route joins at Fengtai the main line of the Peking-Mukden Railway, by means of which this line is connected with the railways in Manchuria, Korea, Japan, and Siberia, while steamer facilities at Hankow bring it into easy communications with the Yangtze River ports and Shanghai.

From the Capital to Hankow the journey occupies 34 hours, by the daily through train which is provided with up-to-date sleeping and dining accommodations.

Chikungshan Mountain (Summer Resort).—Not many Summer Resorts in China inland, can bear comparison with the natural charming views, that reward those who ascend the mountain of Chikungshan, whose summit stands at an altitude of 1,980 ft. On reaching Sintien station, situated 110 miles from Hankow, a serpentine road climbs the mountain, on top of which are hundreds of beautiful bungalows awaiting vacationists, This popular resort is celebrated for its scenery, where an almost unbroken communion with nature can be enjoyed for a week at a time.

Hsi-ling or Western Imperial Tombs.—With their present-day accessibility, there is now little excuse for visitors to Peking omitting a trip to the Western Imperial Tombs, undoubtedly one of the most impressive sights in China. The site of these beautifully adorned Imperial Tombs is close to Liang Ko Chwang station, 79 miles from Peking, which is reached by a Branch-line, formerly built for the exclusive use of the Imperial Sovereigns when visiting the Tombs of their ancestors. The Western Tombs include the mausoleums of four Manchu Emperors and three Empresses, as well as those of a number of Princesses. The region, as a well laid-out park, closely wooded, is justly appreciated for the charming scenery surrounding the Imperial Tombs and is highly recommended to any one in search of the extraordinary and beautiful.

For Particulars, Pamphlets, Tickets, etc., apply to the "Information Bureau" at Peking Head Office or to Tourist Agencies.

SOUTH MANCHURIA RAILWAY

MANCHURIA AND CHOSEN LINES

Circular and Overland Trips at Greatly Reduced Rates

TOURIST TRAVEL OFF THE BEATEN TRACK

Tourists in the Far East should not miss Manchuria. Through Japan, Chosen (Korea), and Manchuria (or vice versâ) is an ideal trip, combining the distinctive characteristics of three unique and profoundly interesting countries.

The Chosen and Manchuria Lines are under the management of the South Manchuria Railway Company. Express trains have been temporarily suspended (except between Fusan and Seoul), but the Ordinary Trains are equal to most American Trains, run at least three times a day from each end, and to some of them Sleeping and Dining Cars are attached. Sleeping berths should be reserved in advance.

Hotels under the Company's management are established on foreign lines at SEOUL (capital of Chosen), FUSAN and SHINGISHU (the two extremities of Chosen), KONGOSAN (the famous Diamond Mountain of Korea, rivalling Switzerland in scenery), MUKDEN (ancient capital of China, home of the Manchuria Dynasty, noted for Imperial Palaces and Tombs), CHANGCHUN (junction for three railways and "key to Manchuria"), PORT ARTHUR (of world-wide fame for its historic sieges and ruined forts), DAIREN (one of the greatest commercial cities in the Orient), and HOSHIGAURA (the finest seaside resort in North China).

From Dairen there are frequent and regular steamers to and from Shanghai, Tsingtao, Tientsin, etc.

For pictorial guide-books, pamphlets, and further particulars, apply to the Tourist and Ticket Agencies, or direct to the

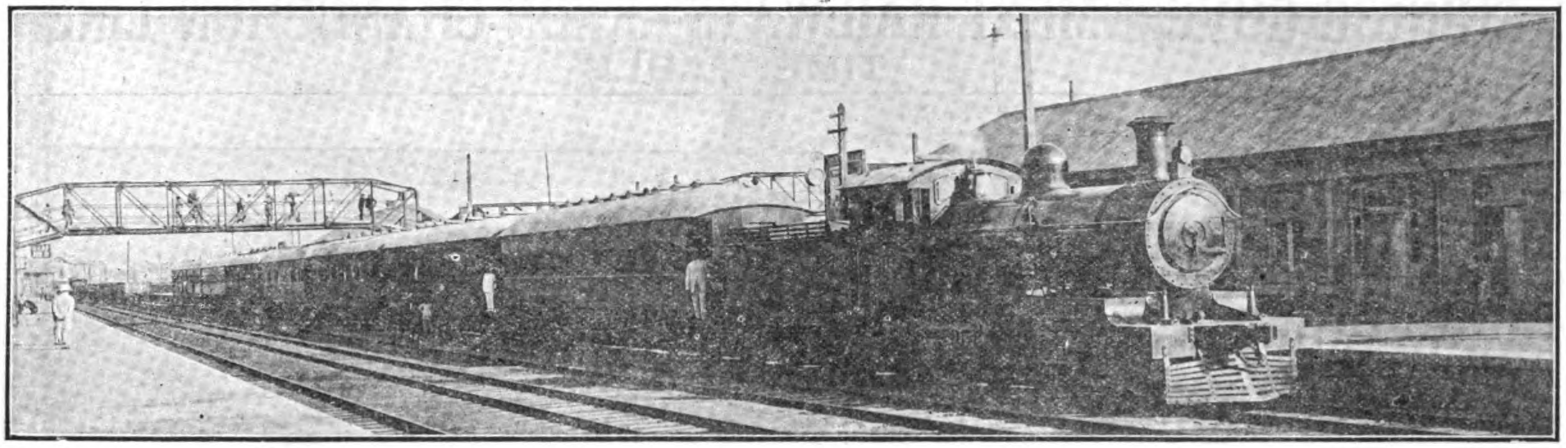
SOUTH MANCHURIA RAILWAY COMPANY

Head Office: DAIREN

Branch Offices: TOKYO, SEOUL, HARBIN, KIRIN, PEKING, AND SHANGHAI

Telegraphic Address: MANTETSU. Codes: A.B.C. 5th Edition, and Lieber's

CHINESE GOVERNMENT RAILWAYS



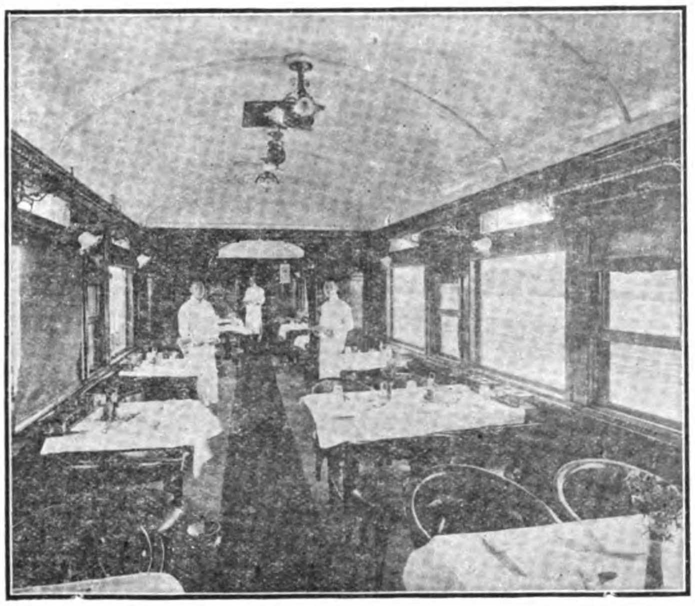
TRAIN DE LUXE AT TIENTSIN EAST STATION

The Peking-Mukden Line

Through service from Peking to Mukden, connecting at Mukden with the South Manchuria Express from Trans-Siberian Route. At Peking connection is made with the Peking-Hankow Railway for Hankow and Yangtze Ports, and Intermediate Points reached by the Chen-Tai Line to Taiyuanfu, the Tao-Ching Line, and the Pienlo Railway to Kaifengfu and Honanfu. Connection is also made at Peking with the picturesque Kalgan Line, "The road to the Great Wall." At Tientsin (Central) connection is also made with the Tientsin-Pukow line for Tsinanfu and Shanghai.

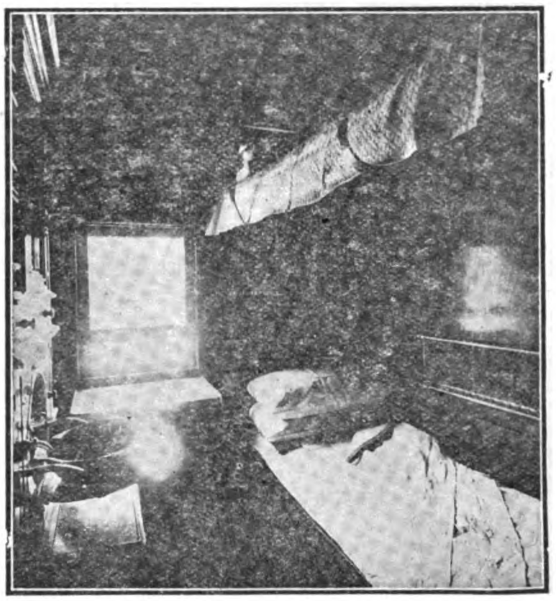
THE RAILWAYS OF NORTH CHINA PASS THROUGH THE MOST INTERESTING PART OF CHINA

PEKING.—The Capital, with the Walls, Palaces, Temples and Tombs.—**TIENTSIN.**—The Great Trade Centre of North China.—**TONGSHAN.**—The Largest Mining and Industrial Town in the Country.—**SHANHAIKWAN.**—Where the Great Wall ends at the sea.—**NEWCHWANG.**—The Busy Commercial Port of Manchuria.—**MUKDEN.**—The Ancestral home of the Manchu Dynasty. A Miniature Peking, with its Walls, Imperial Palaces, Temples and Tombs.



DINING CAR ON TRAIN DE LUXE

The through trains are equipped with Buffet and Dining Car Service. A Comfortable, Modern Train De Luxe of Compartment Sleeping Coaches is operated in connection with the through service of the Trans-Siberian and South Manchurian Railways.



FIRST CLASS SLEEPING BERTH, TRAIN DE LUXE

Through tickets to London and other places in Europe can be obtained at Peking and Tientsin from which stations passengers' luggage can be registered through to destination. Through tickets are issued and passengers' baggage registered through between the important Stations on the Peking-Mukden Railway and the South Manchuria Railway, Chosen (Korean) Railway and Imperial Government Railways of Japan.

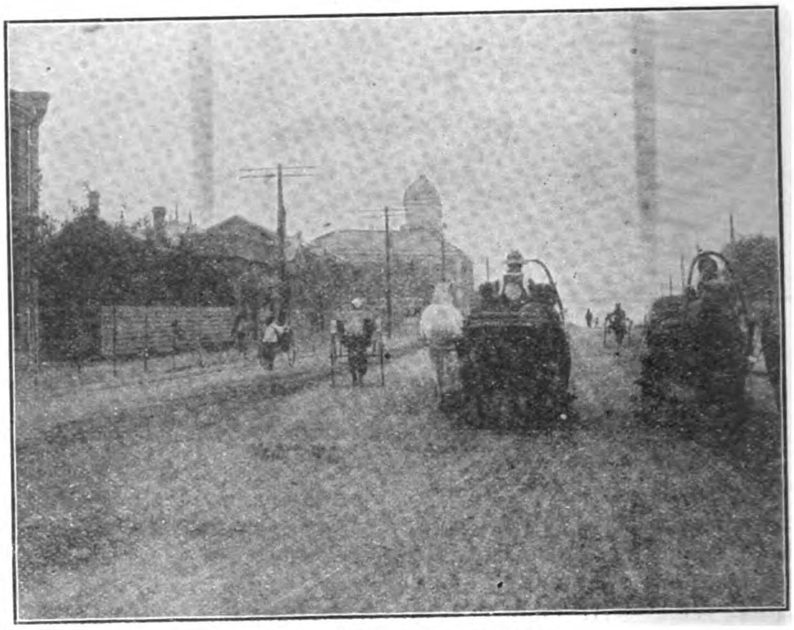
For information regarding the many places of interest in China, Tourists will find "The Travellers' Handbook for China" with maps most useful. It is obtainable at any of the offices of Thos. Cook & Sons. The Chinese Government Railways Time Table book with Railway map can be had at any of the offices of Thos. Cook & Sons, and the International Sleeping Car Co., Hotels, Clubs and at all important Stations. Full particulars on application to any of the Stations or to the Traffic Manager of any of the Railways mentioned and on application to any office in America, Europe or the Far East of The Cie. International des Wagons-Lits, Thos. Cook & Sons, or

TRAFFIC MANAGER, CHINESE GOVERNMENT RAILWAYS (PEKING-MUKDEN), TIENTSIN.

中華民國政府吉長鐵路行車時刻表
CHINESE GOVERNMENT RAILWAYS—KIRIN-CHANGCHUN LINE
TIME TABLE

DOWN TRAINS		STATIONS	UP TRAINS	
DAILY			DAILY	
MIXED	MAIL		MAIL	MIXED
P.M. 1.20	A.M. 8.30 d.	TOUTAOKOU	P.M. a. 6.00	A.M. 11.10
1.30 1.39	8.40 a. 8.42 d.	2.79 CHANGCHUN	d. 5.50 a. 5.45	11.00 10.56
2.14 2.19	9.12 a. 9.14 d.	12.69 KALUN	d. 5.15 a. 5.13	10.22 10.19
2.49 2.51	9.44 a. 9.45 d.	11.13 YINMAHO	d. 4.43 a. 4.42	9.46 9.40
3.07 3.09	9.58 a. 10.00 d.	5.38 HSIACHIUTAI	d. 4.29 a. 4.27	9.25 9.20
3.22 3.24	10.12 a. 10.13 d.	4.58 YINGCHENGTZE	d. 4.14 a. 4.13	9.07 9.05
3.51 3.55	10.35 a. 10.43 d.	9.14 TUMENLING	d. 3.53 a. 3.48	8.42 8.37
4.42 4.46	11.22 a. 11.24 d.	9.26 HUAPICHANG	d. 3.08 a. 3.06	7.51 7.47
5.07 5.08	11.37 a. 11.38 d.	6.46 KUTIENTZE	d. 2.52 a. 2.51	7.30 7.28
5.27 5.32	11.53 a. 11.55 d.	6.83 KIUCHAN	d. 2.37 a. 2.35	7.11 7.07
5.58	12.15 a.	8.30 KIRIN	d. 2.15	6.45

NOTICE:—"d" = Departure. "a" = Arrival. 25th November, 1917

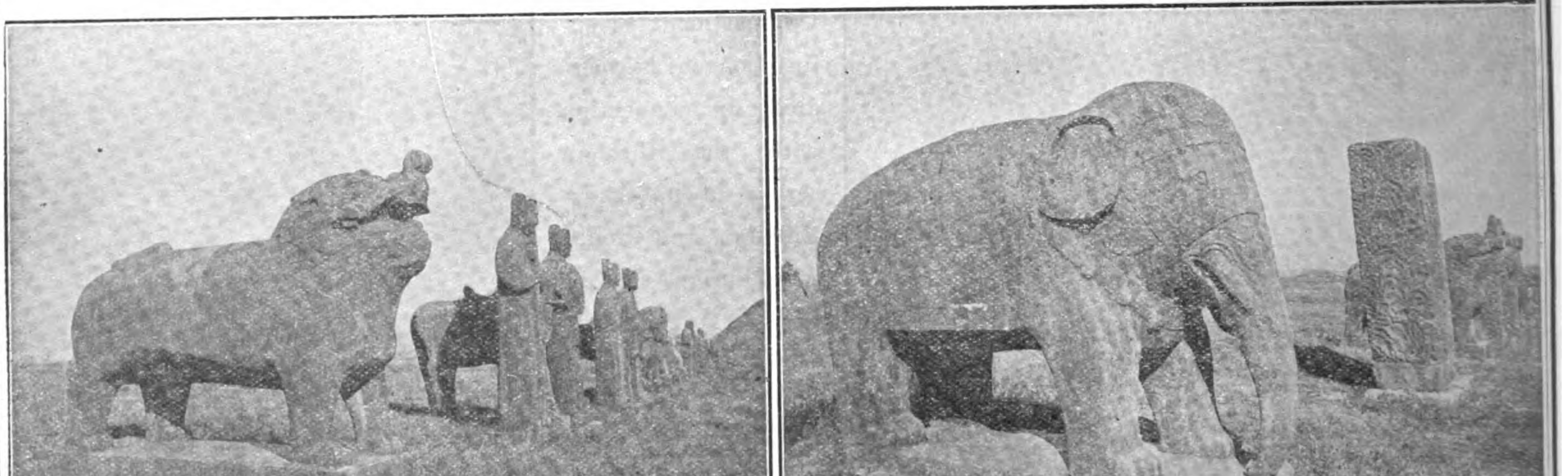


STREET SCENE, CHANGCHUN.

THE PIENLO RAILWAY

(Kaifeng-fu to Honanfu)

"THE FIRST SECTION OF THE PROJECTED CENTRAL TRUNKLINE"



THE SUNG TOMBS NEAR KAIFENG-FU ON THE PIENLO RAILWAY.

The line connects with the through service of the Peking-Hankow Railway at Tcheng Tchéou, enabling the traveller to visit Kaifengfu, the provincial capital of Honan, and the old capital of the Empire at Honanfu.

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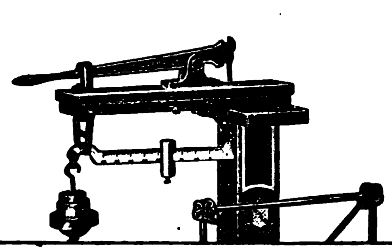

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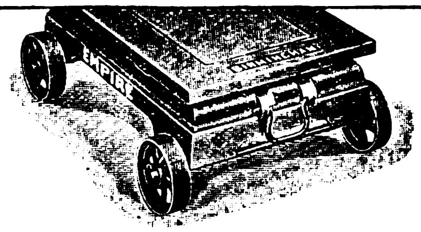

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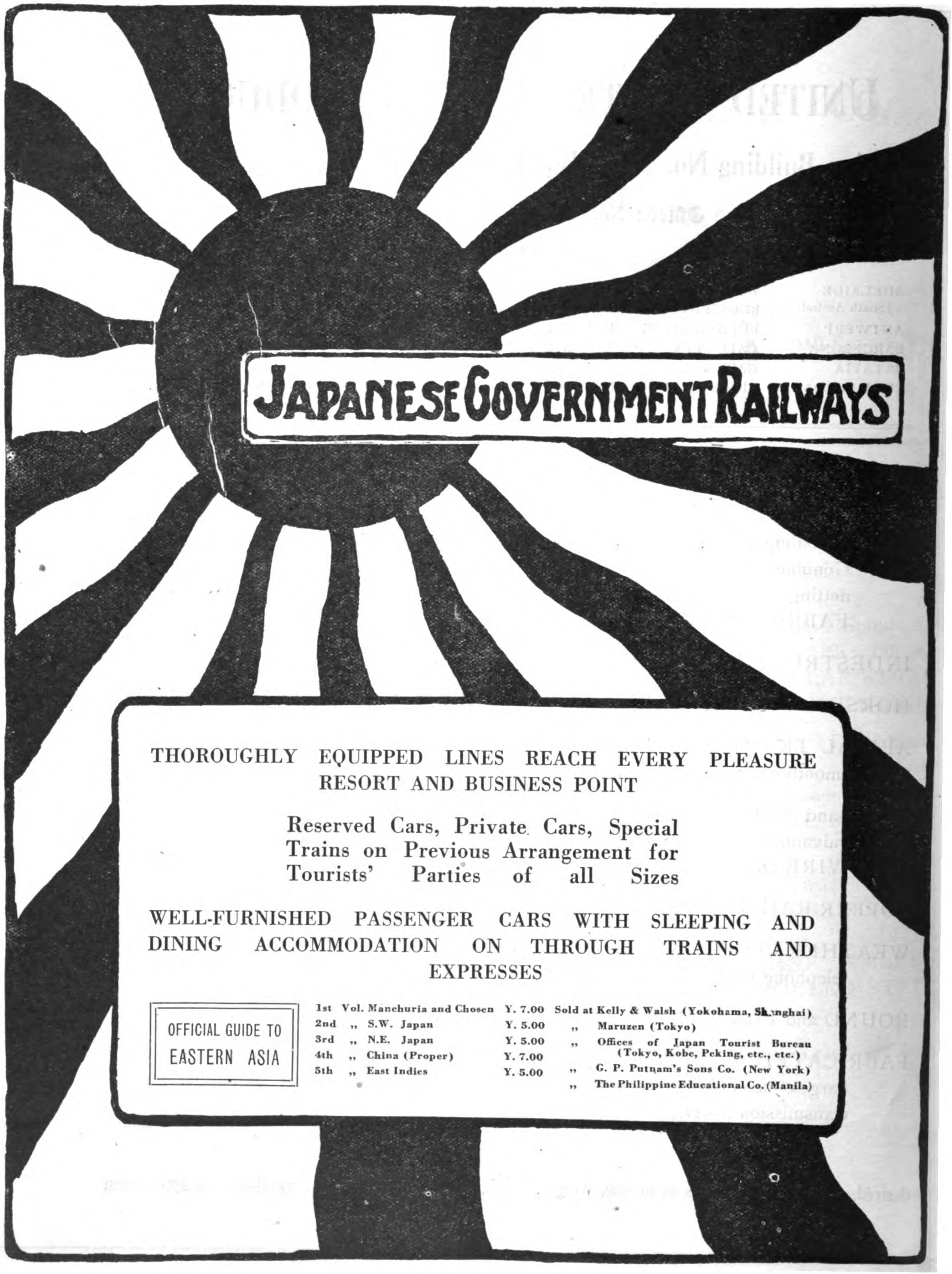

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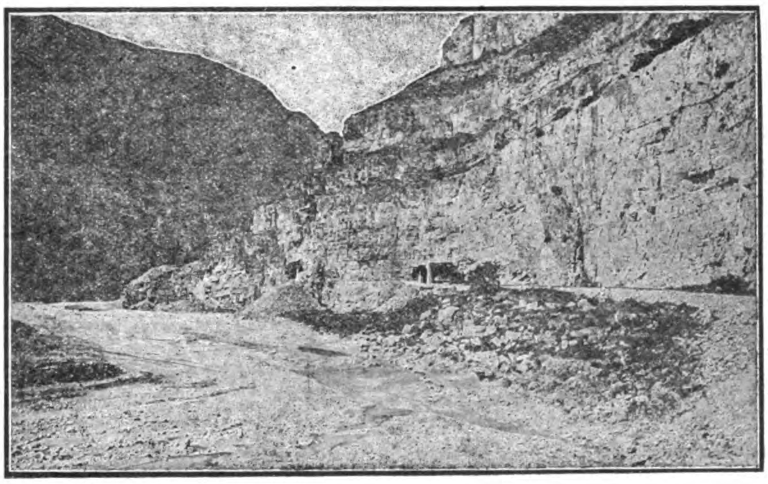
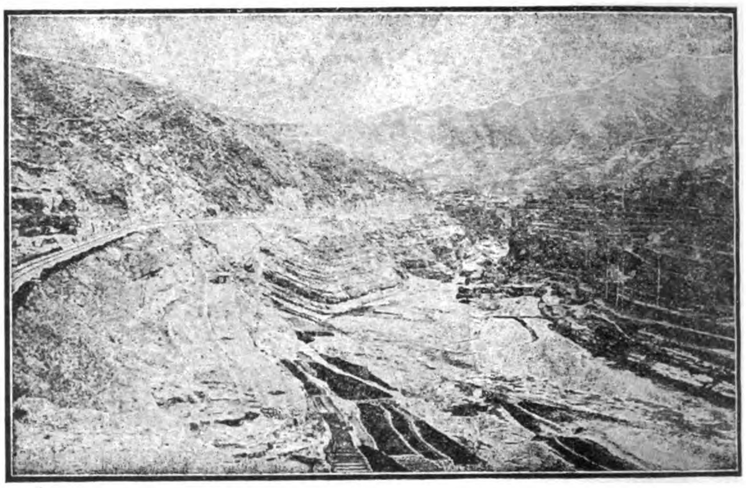
CHINESE GOVERNMENT RAILWAYS

CHENG-TAI RAILWAY

(Chinese Government Shansi Line—Chengtingfu to Taiyuanfu)



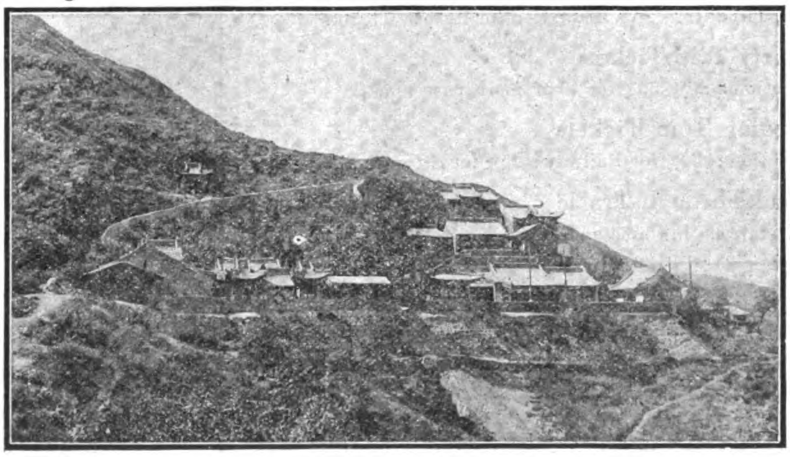


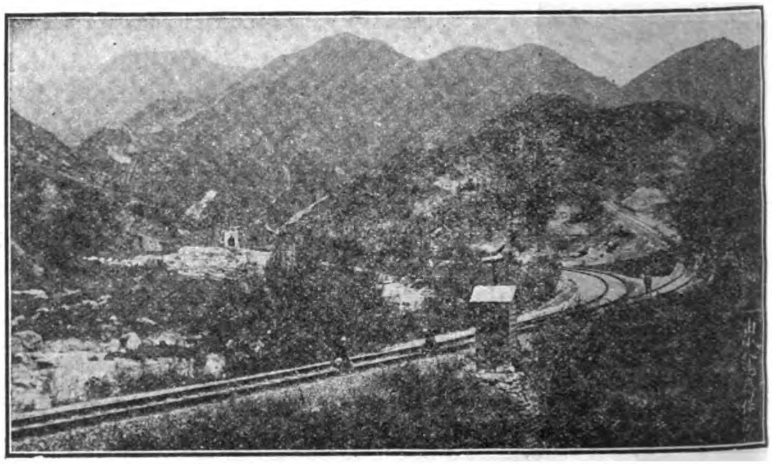
VIEWS ALONG ROUTE OF CHENG-TAI RAILWAY

The trains of this line connect with the through service of the Peking-Hankow Railway, affording Travellers the opportunity of seeing the most picturesque part of China. The line passes through a mountainous section of country, rich in Mineral Resources to the Provincial Capital of Shansi at Taiyuanfu. This interesting city is a great educational centre, and famous for the fine quality of its artistic embroideries.

PEKING-SUIYUAN LINE

"The Road to the Great Wall"

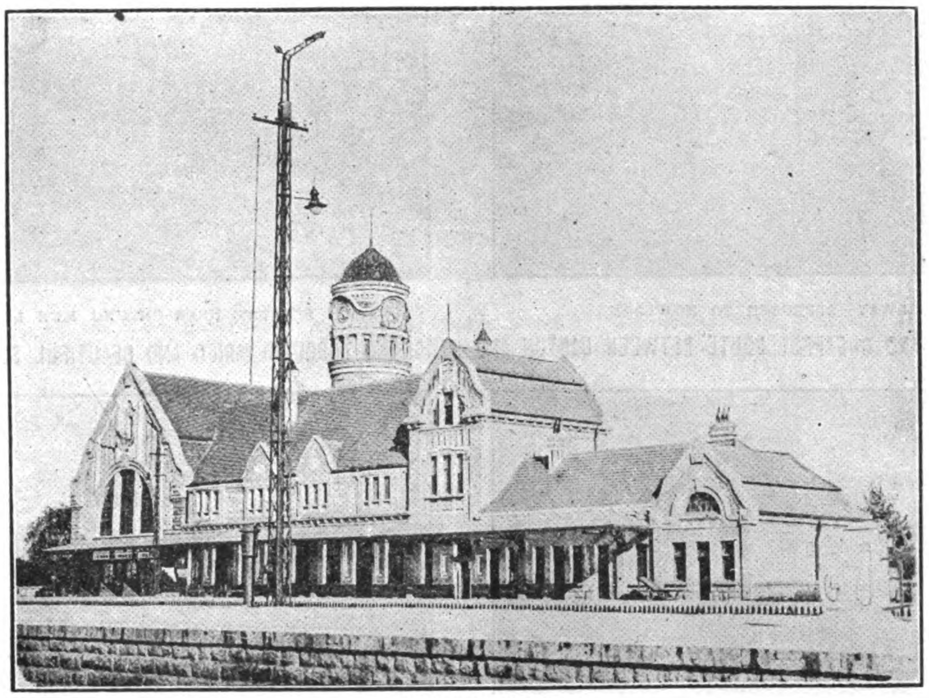




This line follows the ancient caravan route and military highway from Mongolia into China by the way of the historic Nankow Pass. This pass is the Key to Peking, and Kalgan is the gate of the Country. From here the great camel caravans set out on their long journeys across Mongolia to Siberia and Central Asia. This old frontier mart, retaining its time-honored characteristics, one of the most interesting sights of the Old World, is made accessible by the new railway. The line also carries the passenger in two hours from Peking to Nankow, when the Great Wall of China and the Ming Tombs may be seen. A foreign hotel is operated by the railway authorities at Nankow, where chairs and guides may be secured for the Tombs.

CHINESE GOVERNMENT RAILWAYS.

TIENTSIN-PUKOW LINE.



TSINANFU STATION.

THE above-named line, with its SOUTHERN end at PUKOW and NORTHERN end at TIENTSIN is having its through mail trains equipped with SLEEPING and BUFFET CARS running both ways every day. Comfortable seats and best meals are supplied on the trains. SANITARY ARRANGEMENTS are kept in perfect order and condition. A ferry steamer of modern type is provided for the conveyance of passengers across the river BETWEEN NANKING and PUKOW. Along this line travellers are afforded the opportunity of seeing the views of the country and many places of historic antiquities that will serve interest to the travelling observers. The time for the running of the trains are so scheduled as to make them CONNECT WITH the trains of the SHANGHAI-NANKING LINE on the southern terminus and those of the PEKING-MUKDEN LINE at the northern end. Travellers who intend to go to PEKING, KALGAN, TATUNG, MUKDEN, SOUTH MANCHURIA and SIBERIA or VICE VERSA are enabled to effect their journeys of a great distance at a very short space of time, it being considered the SAFEST and QUICKEST route for the travelling public.

For further particulars, please apply to:

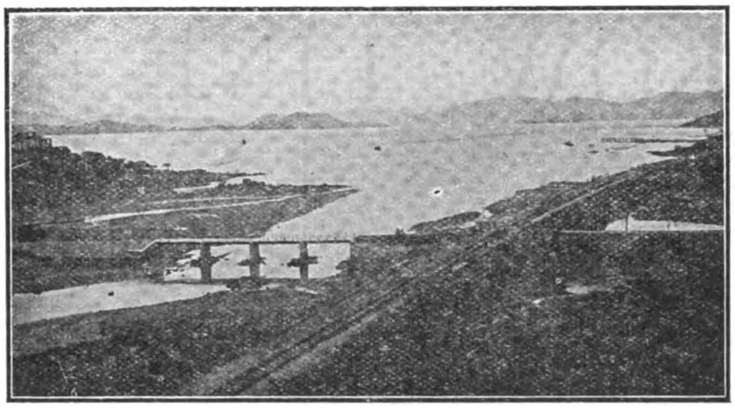
THE HEAD OFFICE OF THE RAILWAY, TIENTSIN, the Agencies of Messrs. THOMAS COOK AND SON, the INTERNATIONAL SLEEPING CAR AND EXPRESS TRAINS COMPANY or the NORDISK RESEBUREAU.

Telegraphic Address: "TSINPURY" TIENTSIN. **Codes: A.B.C. 5th Edition.**

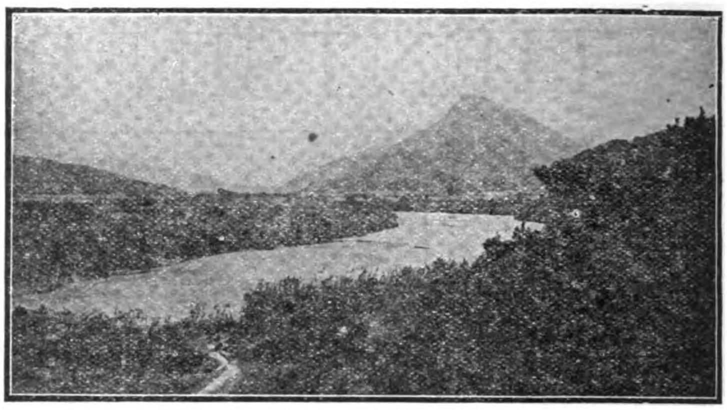
津浦路綫南達浦口北至天津每日均有快車往來並附掛臥車餐車食品精潔座次安舒關於衛生各事皆極講求南京浦口間近添設新式渡輪迎送旅客尤稱便利沿途風景名勝之區古蹟極多足娛游觀者之心目且行車時刻南與滬寗北與京奉均相聯接凡欲至北京張家口大同及奉天南滿西伯利亞等處往來均可尅期而至行旅視為坦途萬里達於旦夕有志游歷者所樂於取道也如有詢問事項天津津浦鐵路管理局或通濟隆洋行萬國臥車公司北方游歷公司等經理處均可通函

CANTON-KOWLOON RAILWAY

VIEWS ON THE BRITISH SECTION (22 MILES) VIEWS ON THE CHINESE SECTION, 89 MILES (Chinese Government Railways)

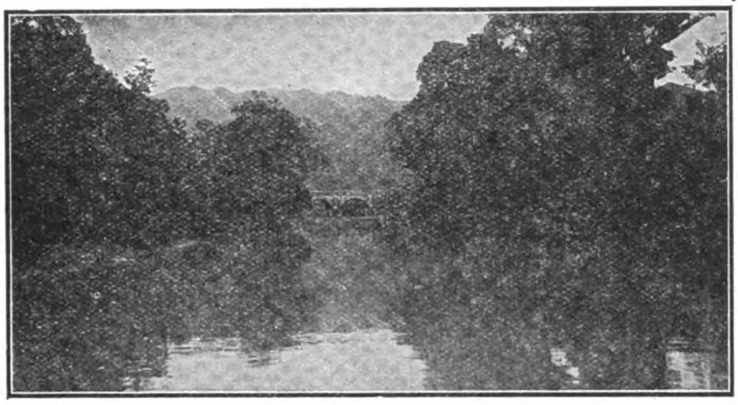


CANTON-KOWLOON RAILWAY—APPROACH TO KOWLOON

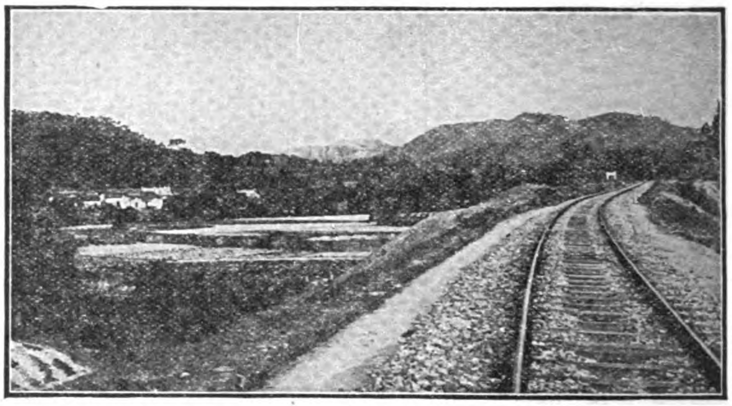


SCENERY NEAR CHEUNG MUK LOW—C. K. RAILWAY

QUICKEST AND CHEAPEST ROUTE BETWEEN CANTON AND HONGKONG THROUGH VARIED AND BEAUTIFUL SCENERY

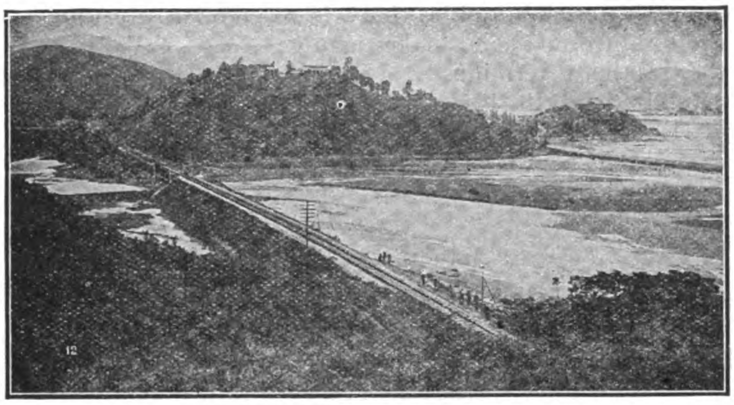


CANTON-KOWLOON RAILWAY—SCENE ALONG ROUTE

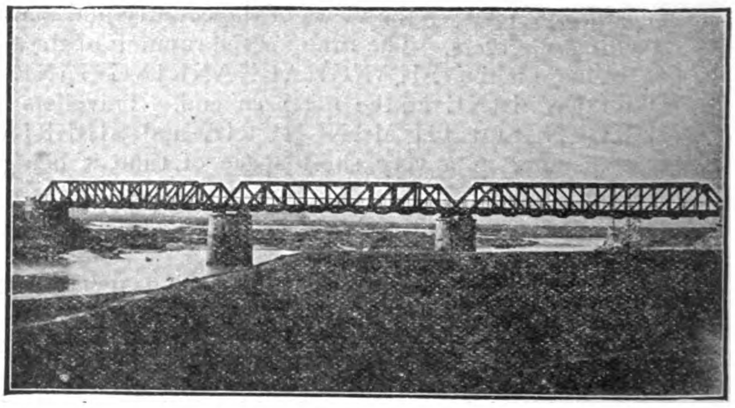


SCENERY ALONG ROUTE

THREE EXPRESS CORRIDOR TRAINS EACH WAY DAILY—HOT MEALS AND OTHER REFRESHMENTS SERVED



CANTON-KOWLOON RAILWAY—CROSSING TIDE FLATS



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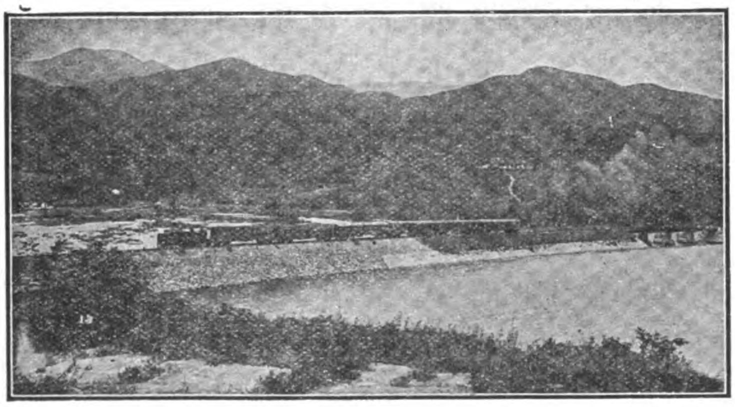
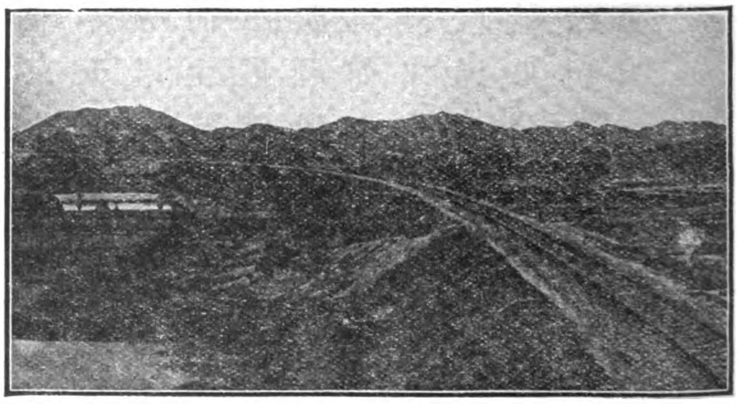


CANTON-KOWLOON RAILWAY—EMBANKMENT APPROACH TO BRIDGE



GRAND CURVE NEAR SHEUNG PING

TIME TABLE from November 7th, 1918

Leave Hongkong (Kowloon) *8.05, 9.20 a.m., *3.00 p.m.
Arrive Canton (Tai Sha Tou) 11.50 a.m., 5.10, 6.40 p.m.

Leave Canton (Tai Sha Tou) *7.30, 8.35 a.m., *3.30 p.m.
Arrive Hongkong (Kowloon) 11.10 a.m., 5.38, 7.25 p.m.

Special terms and special trains for large tourist parties. For further particulars see advertisements or apply to

*Express THE MANAGER (British Section), Kowloon, HONGKONG. THE ADMINISTRATION (Chinese Section), CANTON.

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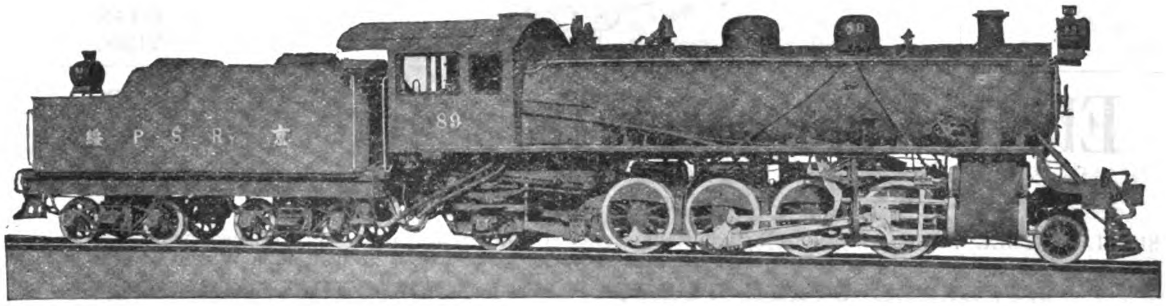
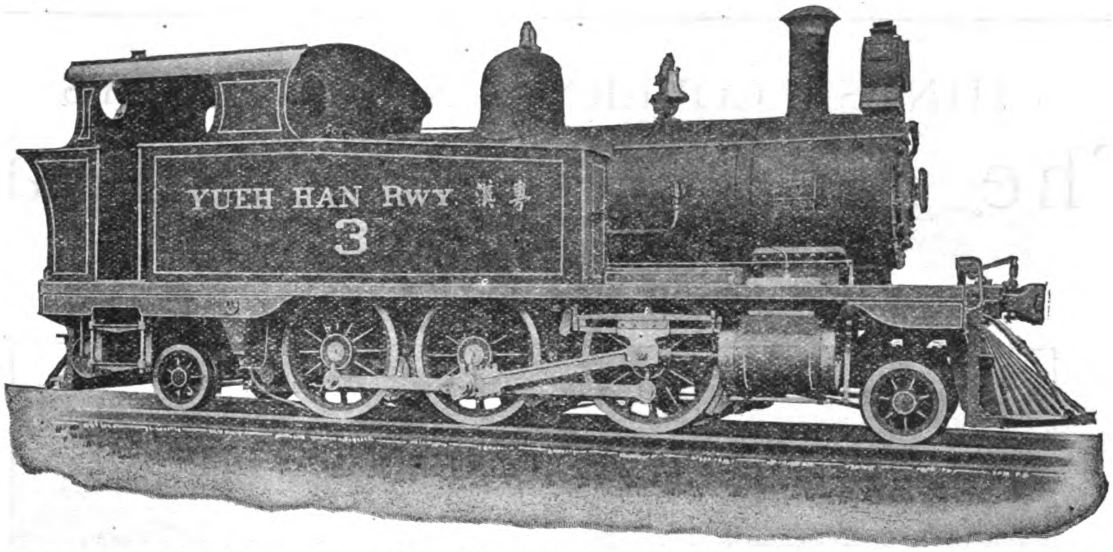


Total Weight of Engine, 187,500 pounds; Weight on Drivers, 139,000 pounds; Diameter of Drivers, 50 inches; Boiler Pressure, 180 pounds; Cylinders, 20 × 28 inches; Maximum Tractive Power, 34,300 pounds.

18 of these engines were delivered by this company to the Pekin-Kalgan Railways

The American Locomotive Sales Corporation, through its technical staff in China, or by writing to the head office, will be glad to co-operate to the fullest extent with the mechanical officials of the railways in the preparation of designs of locomotives to meet the present as well as the prospective requirements of the railways in China.



Total Weight of Engine, 98,800 pounds; Weight on Drivers, 72,700 pounds; Diameter of Drivers, 48 inches; Boiler Pressure, 180 pounds; Cylinders, 15 × 20 inches; Maximum Tractive Power, 14,340 pounds.

6 of these engines were delivered by this company to the Canton-Hankow Railway

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STANDARD SIZES AND GAUGES. WELDLESS COUPLINGS.

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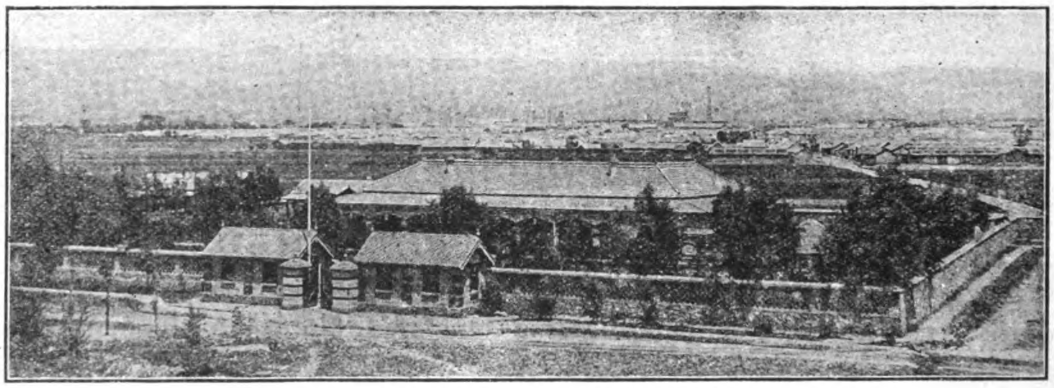
CHINESE GOVERNMENT RAILWAYS

The Tao-Ching Railway

TAOKOU TO CHINGHUA
(CHINESE GOVERNMENT HONAN LINE)



A VIEW ON THE TAO-CHING RAILWAY, WITH MINE IN DISTANCE.

"CHINA'S ROAD OF ANTHRACITE"

The trains of this line connect at Sin-Siang-Sien with the through service of the Peking-Hankow Railway. It taps the great Anthracite Coal Deposits of Shansi, and conveys the products of the Mines to the nearest navigable river.

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ENGLISH ELECTRIC

COMPANY, LIMITED

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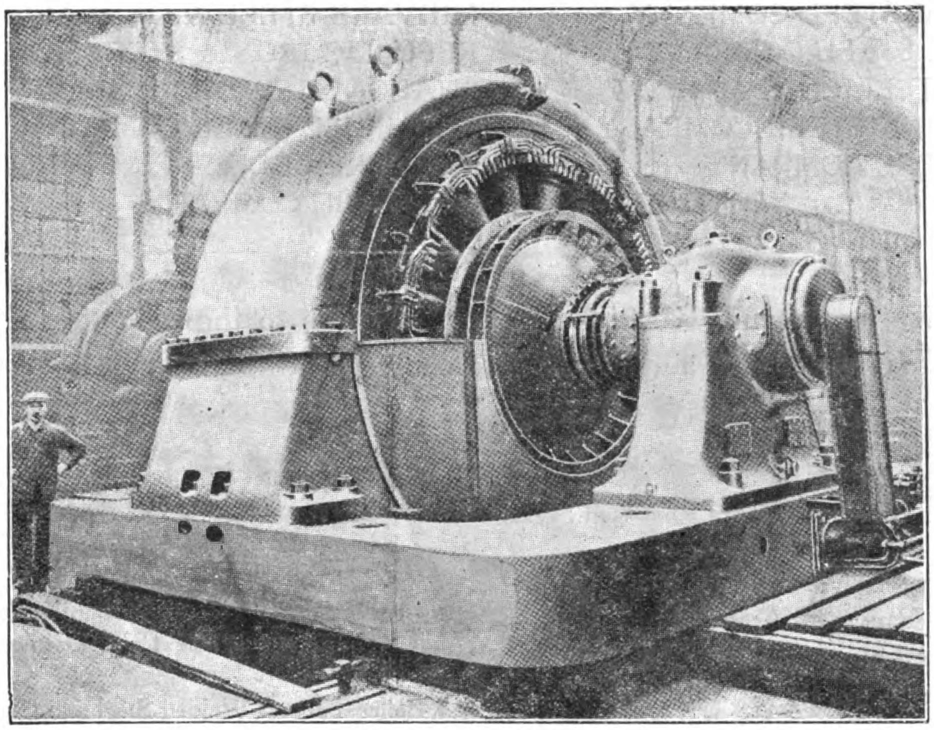

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Rails, Light and Heavy, with Accessories
Girder and High Tee Rails, with Accessories
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Lackawanna Steel Sheet Piling
Bars, Bands, Hoops
Hot and Cold Rolled Strip Steel
Plates—Tank, Hull, Flange, Boiler, Marine Boiler and Fire Box quality; also Boiler Heads and Fronts, Manholes and Manhole Fittings, and Boiler Braces
Sheets—Plain and Galvanized, Flat and Corrugated, Blue Annealed
Wire Products—Plain and Galvanized, of various grades; Wire Nails, Wire Fencing, Barbed Wire
Tin Plate
Pipe—English Gas and Steam, American Standard Weight, Extra and Double Extra Strong; Black and Galvanized Line Pipe; Casing; Tubing; Drill Pipe and Drive Pipe
Boiler Tubes—Welded Steel and Charcoal
Electrical Conduit—Rigid and Flexible
Cold Rolled and Cold Drawn Steel Shafting
Bolts and Nuts and Spikes
Forgings, Axles, Rolled Steel Car Wheels, Tires
Alloy Steels
Tool Steels

We make a specialty of large size plates, one of our Member Companies having recently completed a mill in which rectangular plates can be made up to 190 inches wide, circular plates up to 196 inches diameter, and flanged boiler heads up to 183 inches diameter. Plates recently completed there are the largest that have ever been produced.

As our Member Companies' annual ingot producing capacity is in excess of 12,000,000 tons, we are in a position to handle the largest requirements as well as give our customers fair prices, quick service, and dependable attention to every detail.

Inquiries should include exact specifications, giving quantities desired, particulars as to size, weight, packing, country of destination, etc., and purposes for which the materials are required.

BALDWIN SERVICE

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We have been giving particular attention to the development of BALDWIN SERVICE, with a view to making it as comprehensive as possible. This service includes:—

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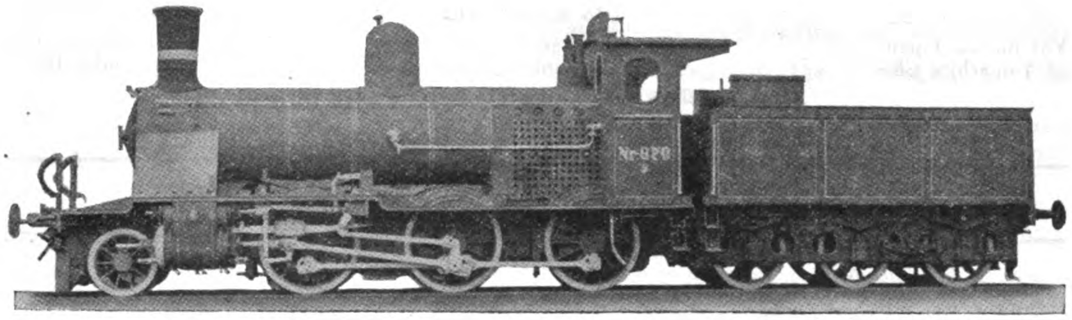

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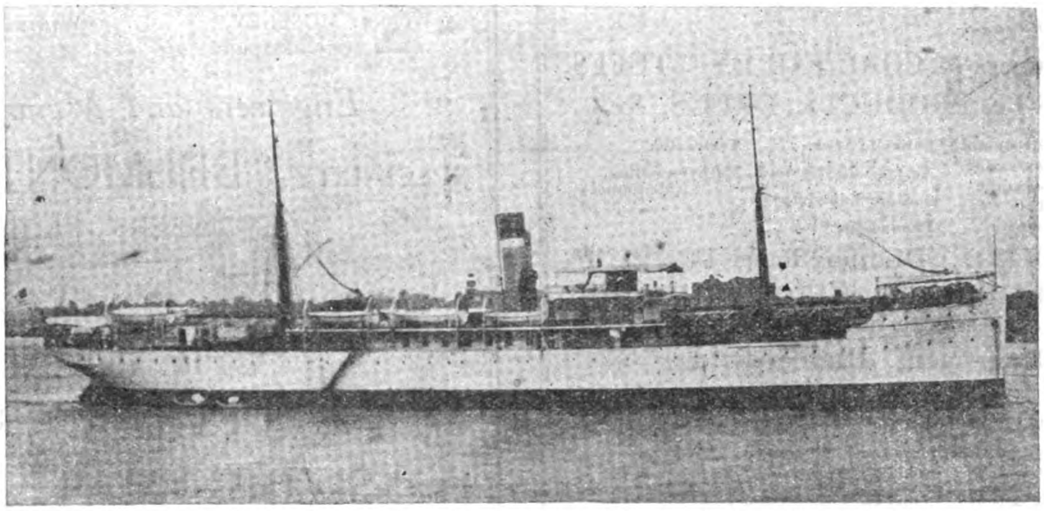

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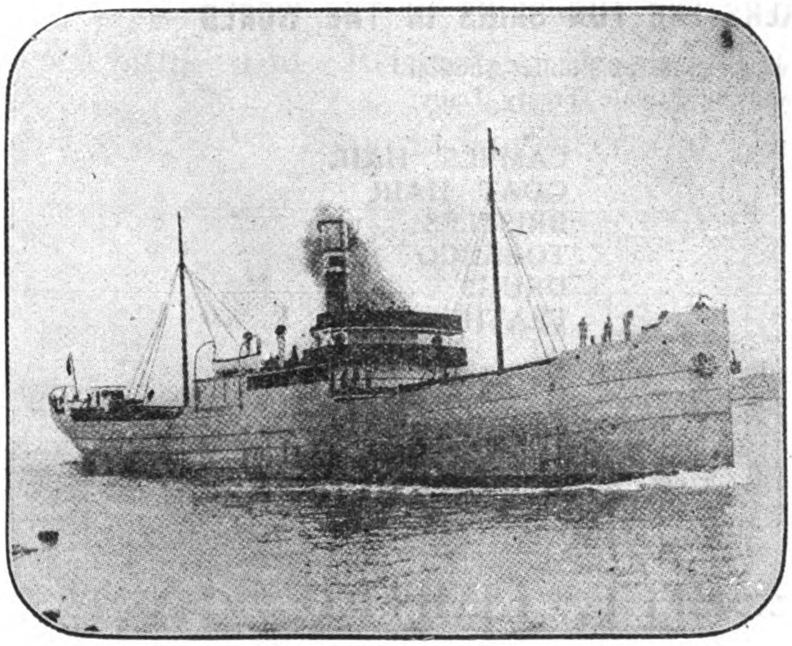

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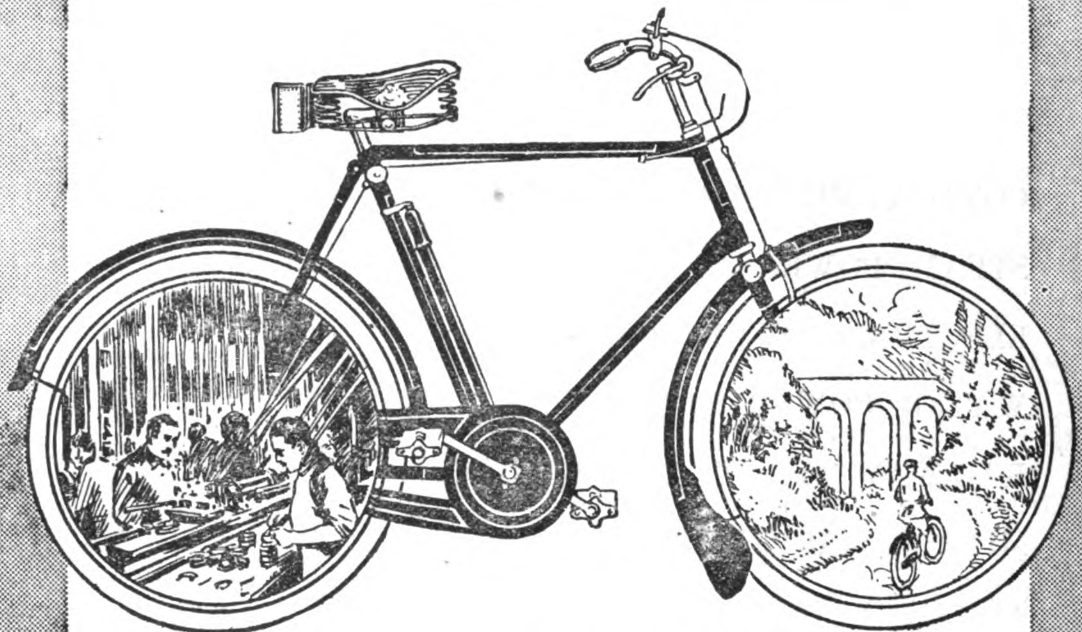

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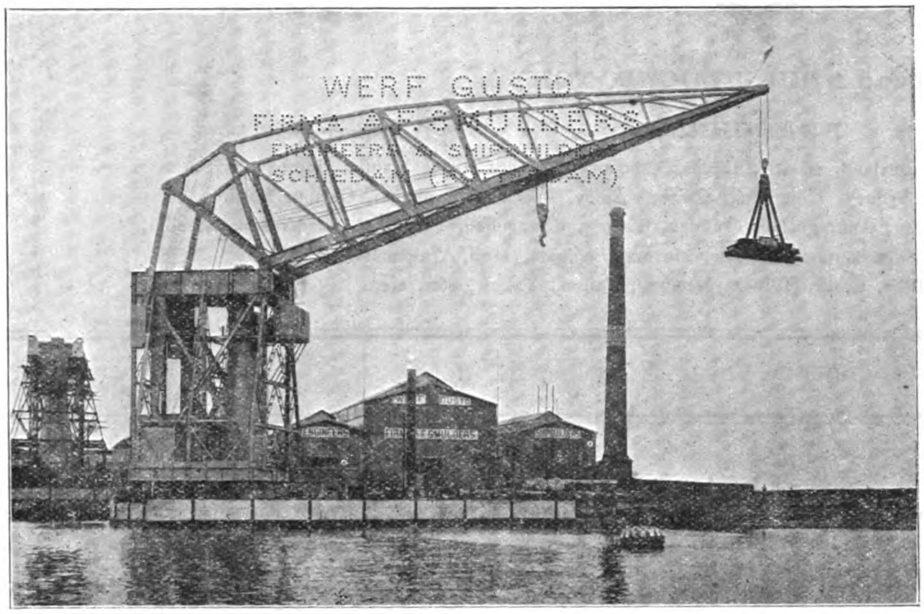

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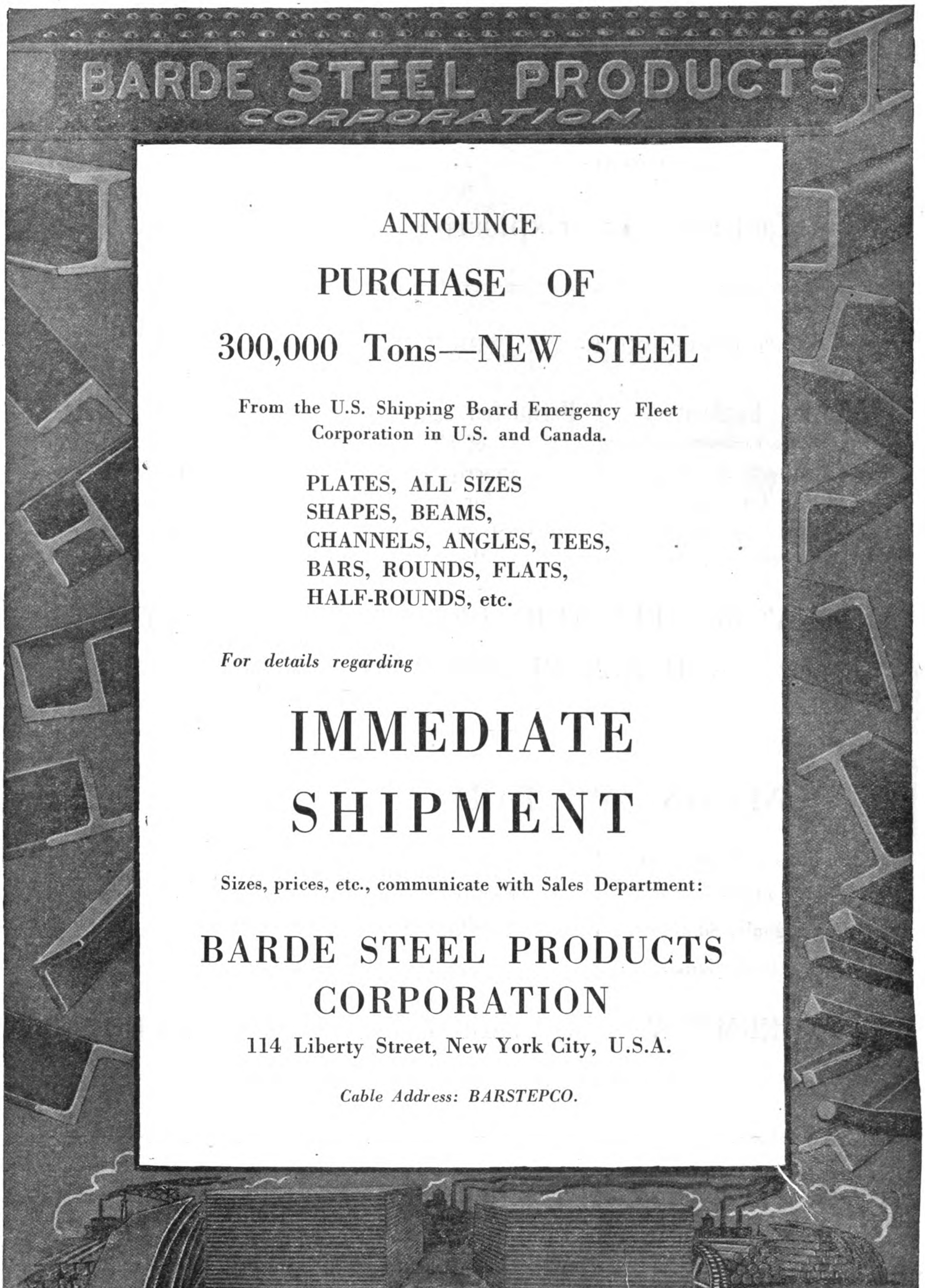
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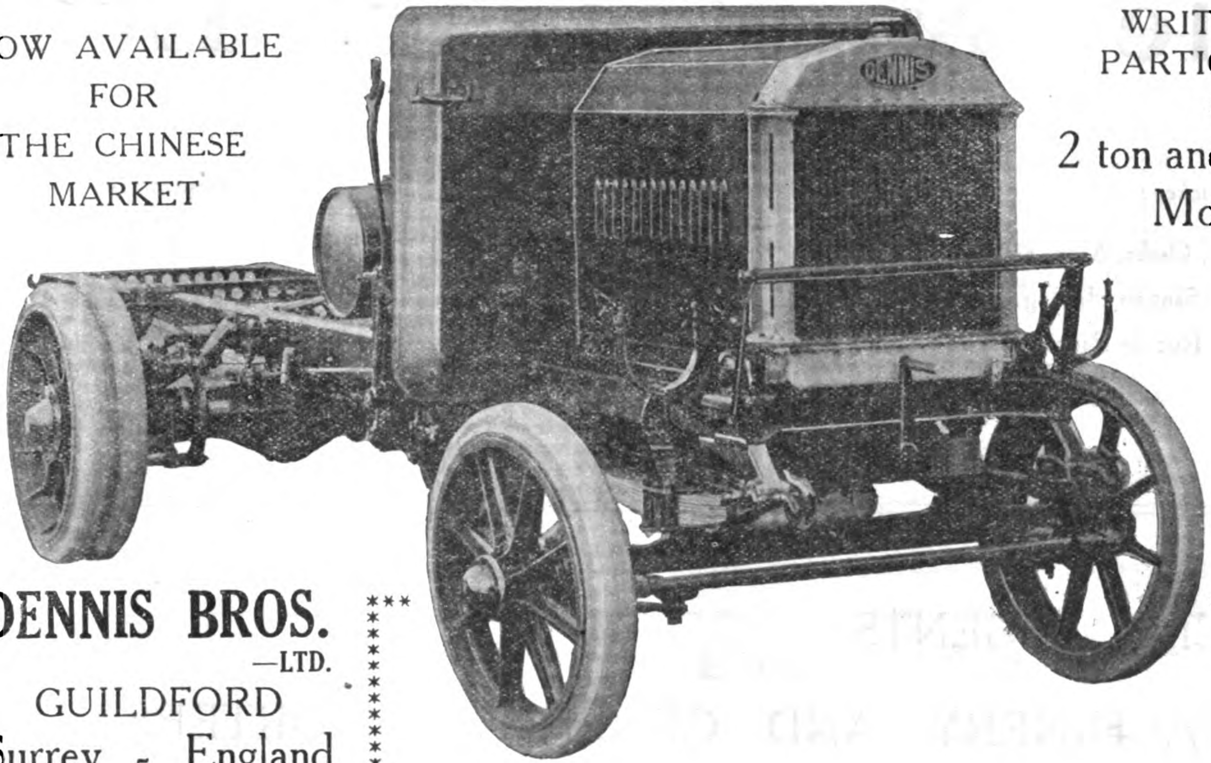

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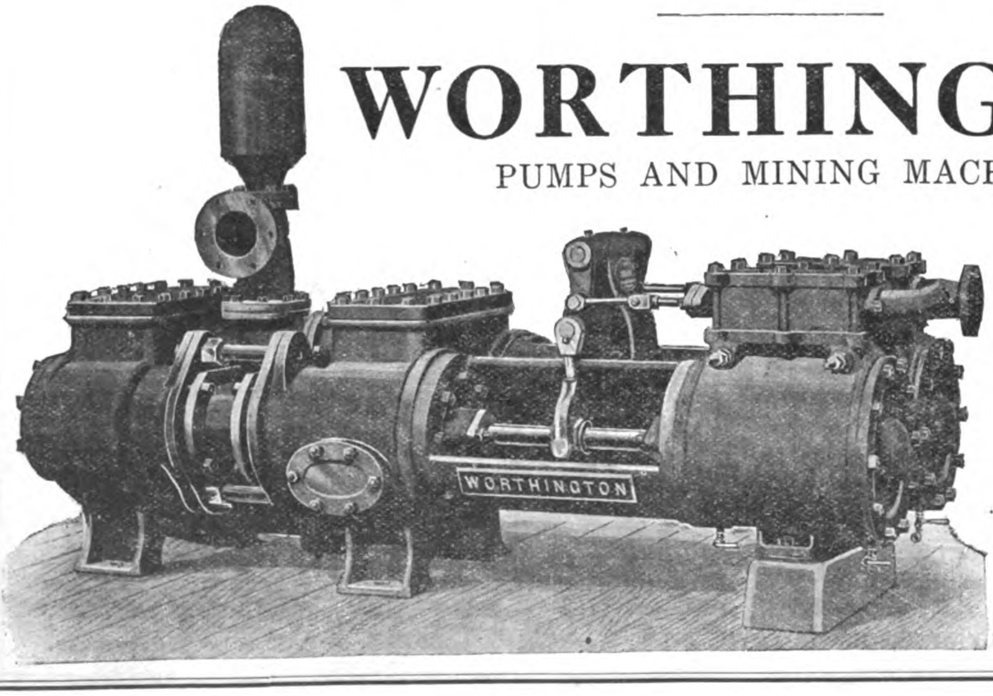

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ENGINEERING FINANCE COMMERCE

VOL. XVI SHANGHAI, MAY, 1920 No. 5

Great Plans for Education in China

YALE-IN-CHINA—An Educational Idea on a Large Scale

By Amos P. Wilder

(Former U. S. Consul-General at Shanghai)

THE old fashioned college was a matter of recitations, and only incidentally did its good things spill over for the benefit of outsiders; but the modern university is a storm centre of activities and a dynamo of influences. It is a collection of experts in many lines and it is obviously absurd to limit its usefulness. Thus when the driving power of Yale University is put behind an extension of "Veritas et Lux" into China, it is a legitimate function of a modern university. This article has to do with one of the half dozen leading colleges in China, where Yale graduates teach and Yale doctors heal; the whole supported by Yale and her friends.

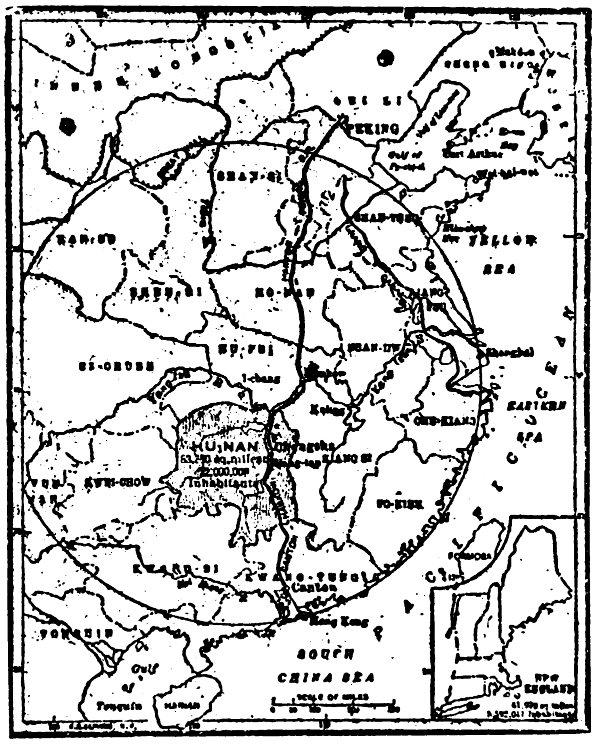
A group of Yale graduates at the time of the Princeton games were chatting in the Graduates' Club at New Haven when a Buffalo man of national reputation said, "Of all these outside things the college is doing, this 'Yale-in-China' proposition mosts grips me. The more I read of it, the more important it seems. The fact is, Yale is starting a centre across the Pacific that is to play a very large part in future trade and international politics, as well as in philanthropy."

Begins in 1906

The work to which he referred is "the College of Yale-in-China," now a considerable plant occupying forty acres outside the north gate of Changsha. Instruction began in 1906 in rented quarters within the crowded city walls. The little group of Yale men and women was neglected and distrusted at first by the Chinese of the proud provincial capital. For many years the teachers did their work under insanitary and inconvenient conditions. But in 1912 the home authorities started a vigorous campaign to house Yale-in-China in a new group of buildings, scientifically planned and well-built; and engaged the New York firm of Murphy and Dana to design such a group, in an adaptation of the beautiful native architecture. Construction started in 1914; and now the splendid new campus, in the open country outside the City Walls, is more than half completed (the light-toned buildings in the accompanying bird's-eye perspective are already finished).

The hospital, a gift of a member of the class of '97, is, next to the splendid institution just opened at Peking by the China Medical Board of the Rockefeller Foundation, the best in China; and is the most imposing building in a province of 22,000,000 people. This cost $200,000. A dormitory houses 120 students; and there is urgent need for a second dormitory, as at present applicants are being refused. There is the Atterbury Memorial Chapel; a laboratory for the study of physics, biology and chemistry; a temporary recitation hall, and a number of residences for the faculty.

The Chinese themselves are now erecting a building for medical uses. A library is proposed as a memorial to Warren Seabury, for this his father has collected $10,000, and when the balance is forthcoming the building will be erected. The handsome recitation building, to cost $75,000, should be built as soon as possible.



Hunan Province in whose Capital, Changsha, is located Yale-in-China

It is also desirable to secure more land before prices become prohibitive. The new North and South Railway now building between Hankow, the great central city of the country ("The Chicago of China") and Canton, the metropolis of the south, skirts the Yale campus. There is a land boom on in that part of the city as the high-class Chinese wish to live in a district so handsome and well cared for as the college campus. The example of other colleges, forced to buy land at fancy prices in the later years, shows the desirability of "shopping early" in the matter of land purchases. As a matter of fact land values in China are not especially cheap. Their measure is the "*fong*" equal to 100 square feet. There are thus 400 *fong* to the acre. Choice land may be quoted at $15 to $18 per *fong*, or over $7,000 an acre—and this "outside the walls" or, as we would say, "away from the centre of the city."

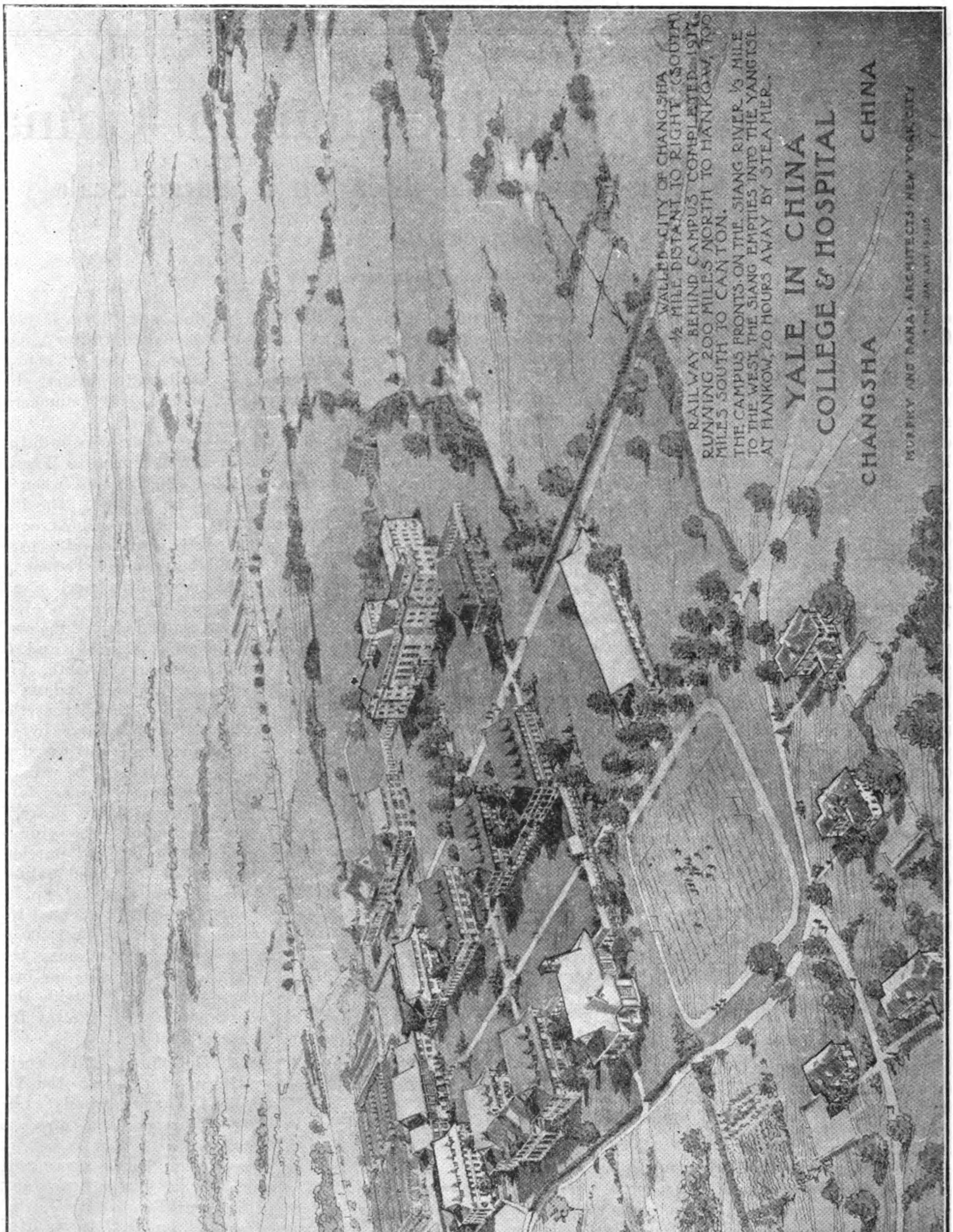
The officers of the society in New Haven who manage the Yale-in-China plant—engaging and sending out teachers, doctors and nurses—have long appreciated what is being done; but only recently has this appreciation begun coming to the body of graduates. "Yall" (which is the Chinese term for the college, meaning "The College of Elegant Proprieties") was mooted in 1902 and the society incorporated under the laws of Connecticut the following year.

In the winter of 1919 the Connecticut legislature empowered "Yall" to confer degrees. The work was a missionary venture in the beginning; indeed, the official name is still "The Yale Foreign Missionary Society." Timothy Dwight was the first president, and Dean Wright was the second. The earnest type of professor and graduate made up the directory and the two or three young men sent out to learn the Chinese language, select

a location and make a start were either ministers or active religious workers. Such auspices are favorable for a work that is to be vital and enduring; indeed, they are essential.

Thus the China Yale was started. Eighteen years ago young men of ability were not going to betake themselves to interior China for a life's work unless they had a driving power within—nor indeed will they now. It surely is not for profit that doctors and teachers go out. They are paid enough to live on and their lives are insured, but no more.

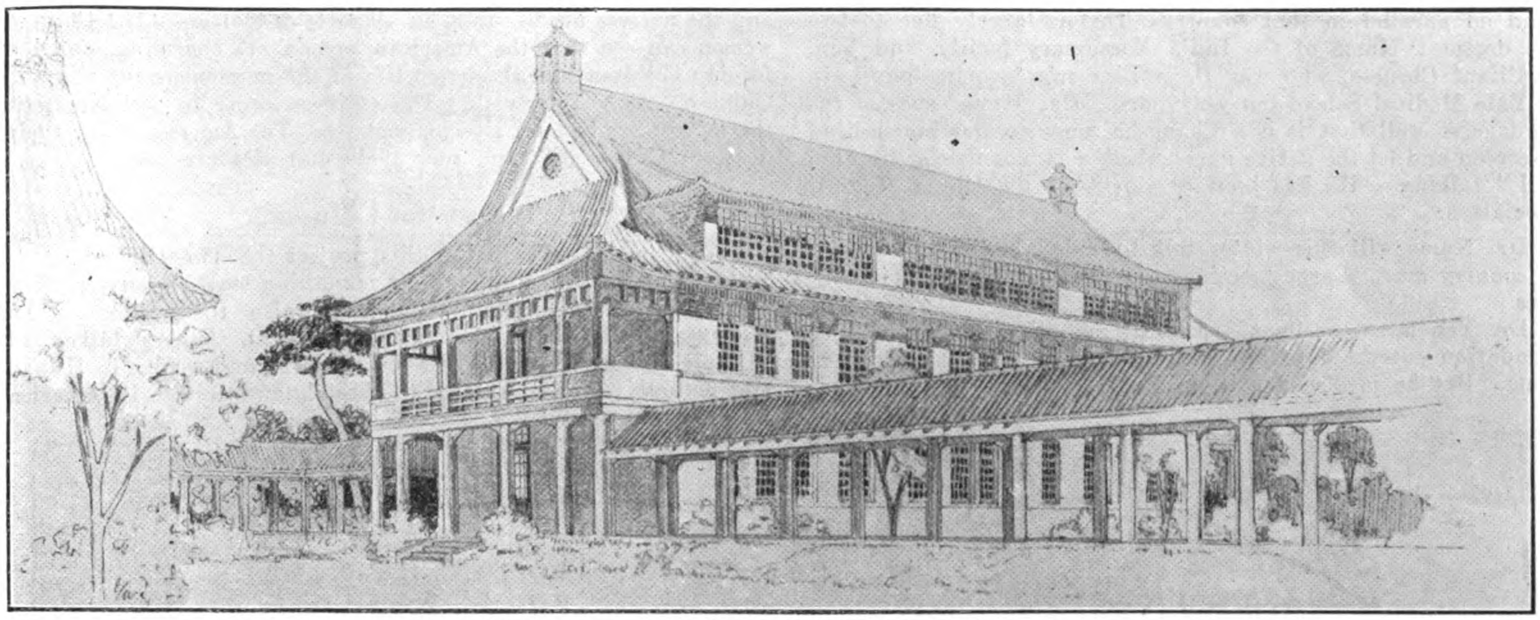
Dr. Welch of Johns Hopkins, who toured China for the Rockefeller Foundation in 1914, was much impressed by the close relations of the Chinese with Yale's people. In fact he said he



Yale-in-China, Changsha, Hunan. Academic and Medical Groups

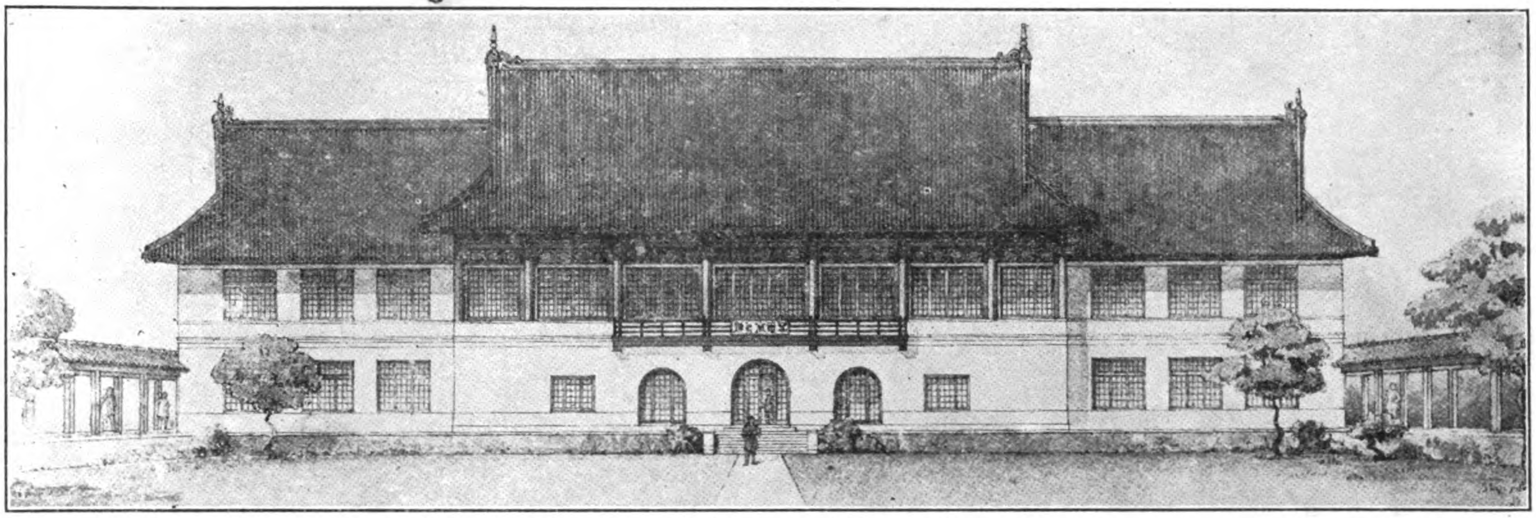
Note.—The six buildings shown in the lighter tone have been completed; also four of the residences in the foreground

BRITISH MUSEUM

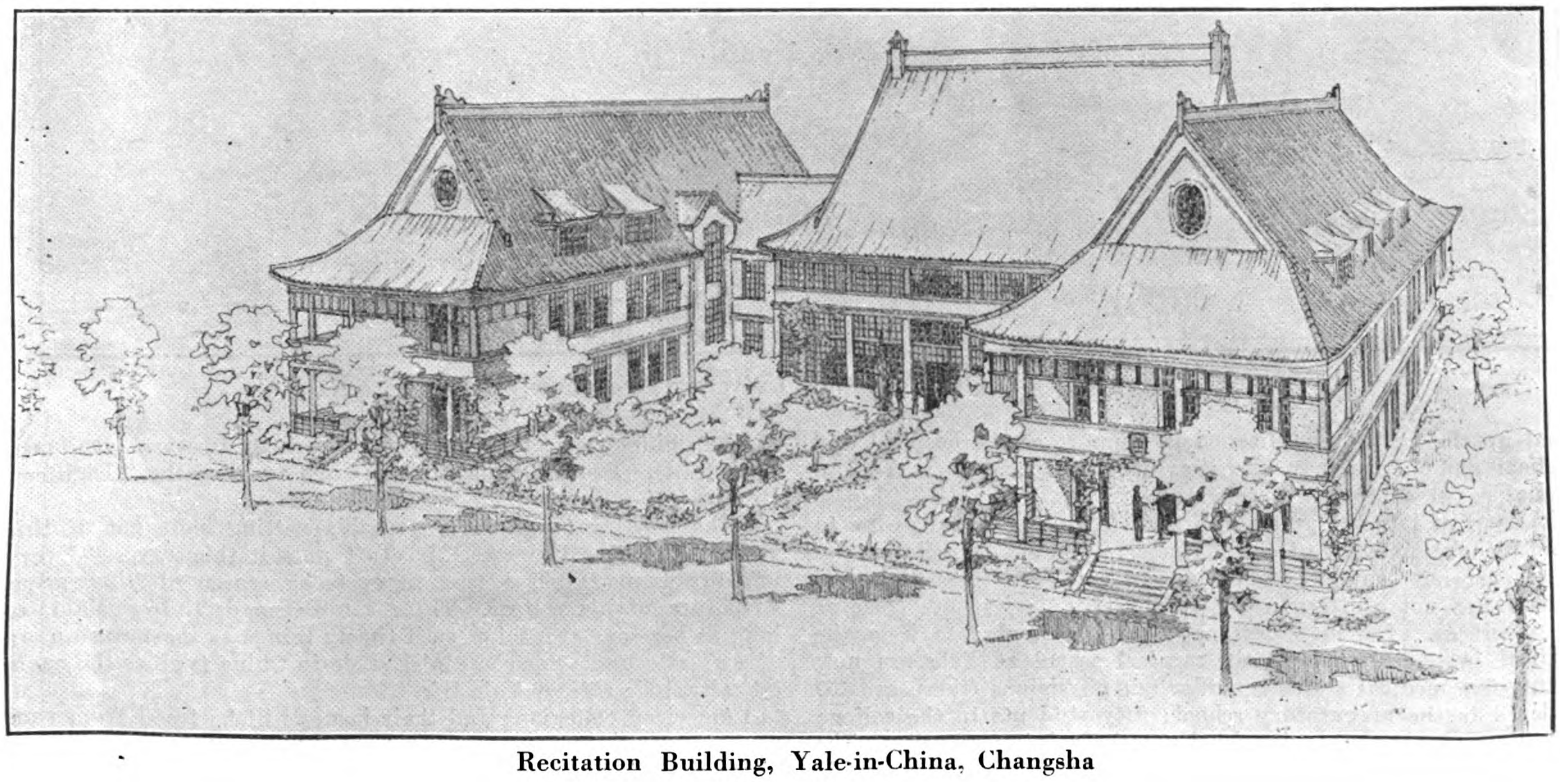


Laboratory Building, Yale-in-China, Changsha

Note.—The funds for building this Laboratory were contributed by the China Medical Board of the Rockefeller Foundation



Campus Elevation of Library, Yale-in-China, Changsha



Recitation Building, Yale-in-China, Changsha

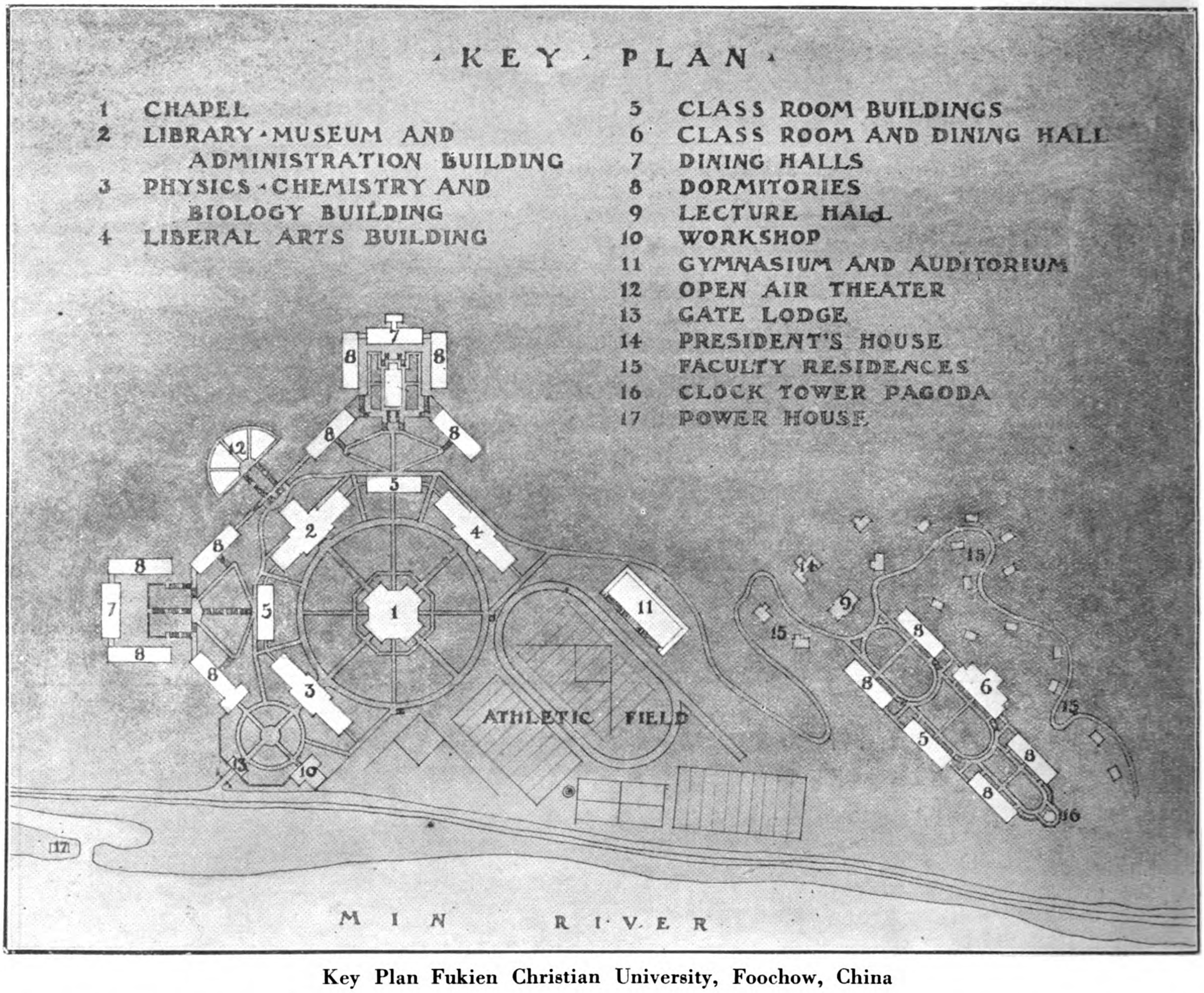
found no parallel in that country. This is largely due to two Yale doctors: Hume of the India Missionary family, and Yen, a brilliant Chinese, who was Dean Blumer's favorite pupil in the Yale Medical School ten years ago. Dr. Hume speaks the language so well that it is a Changsha game to put him behind the screen and let the native guess whether or not it is a "foreign devil" talking. He has been president of the China Medical Association.

Dr. Hume will this winter talk to Yale Alumni associations the country over. Large meetings are being arranged in the cities.

Dr. Yen is so excellent a medical man that the Rockefeller Foundation entrusted to him its hookworm investigation in China. But he is also a statesman. It is largely he who has and the natives need counsel in all sorts of matters. The Chinese women can see that the American women are charming, and the foreign children and the home life of the newcomers interest the Chinese. They inter-visit. The Chinese came to believe that the newcomers had no ulterior motives. The Americans lay their dead in China soil; and now their destinies are one.

Best to Chinese

Yale is exemplifying in this project the twentieth century conception of a university. In it is nothing local or narrow. The machinery of instruction is there, but also the vision of an understanding between the East and West. Others talked of "Hands Across the Sea"; Yale sent her men and women to Hunan and actually did it. Yale is the best known college in America

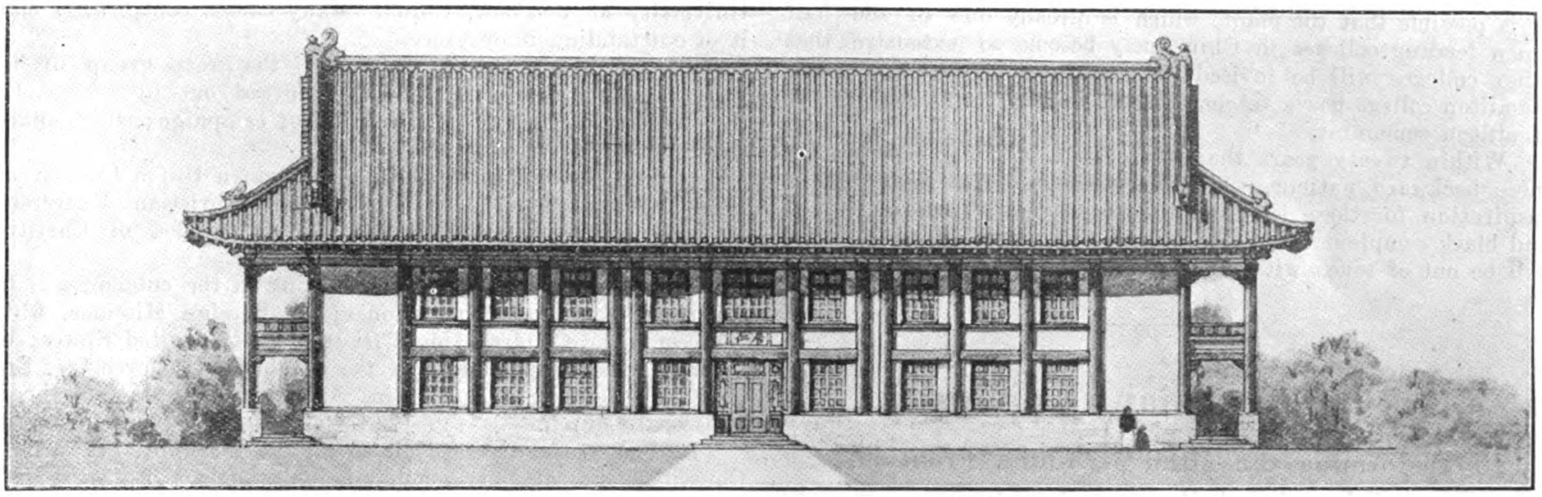


Key Plan Fukien Christian University, Foochow, China

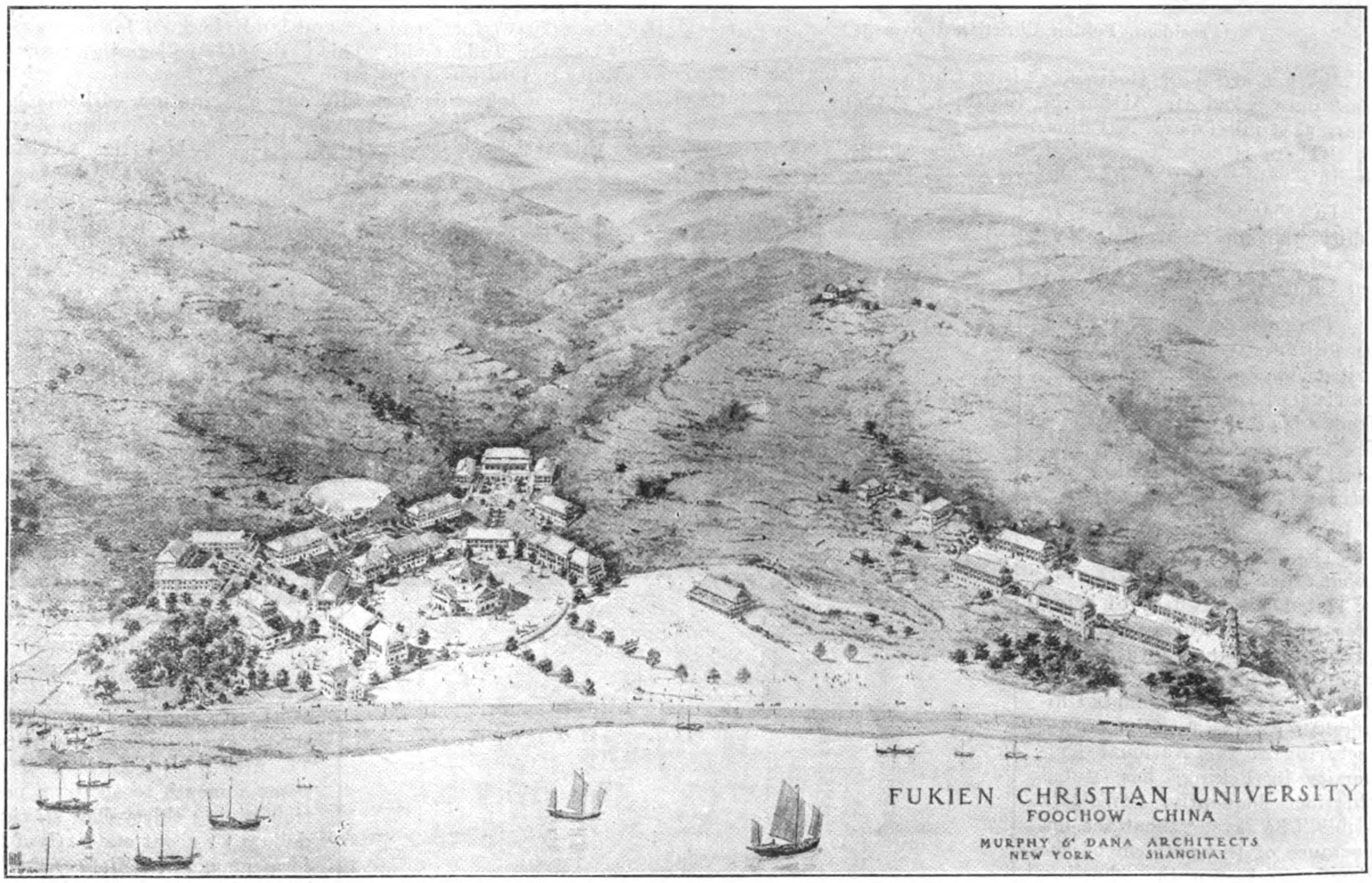
lined up the gentry and literati in support of the hospital and medical school, and now the provincial government makes an annual grant of $50,000 a year to the work. This the Chinese paid until of late the perturbed condition of the country due to the factional fighting of the Chinese, and the depreciation of local currency interfered to an extent. But these high-class Chinese are not quitters; some very pretty stories have come of the sacrifices, of money personally advanced, etc., to keep the hospital in operation. In the medical school at Yale are now seventy-five medical students under ten physicians (there are 150 students in the preparatory school; fifty students in the college and fifty of both sexes in the Nurses' Training school). The Chinese like Americans. They can see that our men are able to the Chinese, as Yung Wing was the first American graduate (Yale 1854). To Yale come students from seven of the "Eighteen Provinces."

The New Haven Yale is probably getting more out of this venture than the Chinese. Mr. Taft puts it this way: "Every undergraduate thinks bigger thoughts by reason of this great adventure of his college. There can be no declining Yale so long as her sons are doing such timely things as the building up of a greatly undeveloped people. Yale in China typifies the earnest, altruistic side of Yale life."

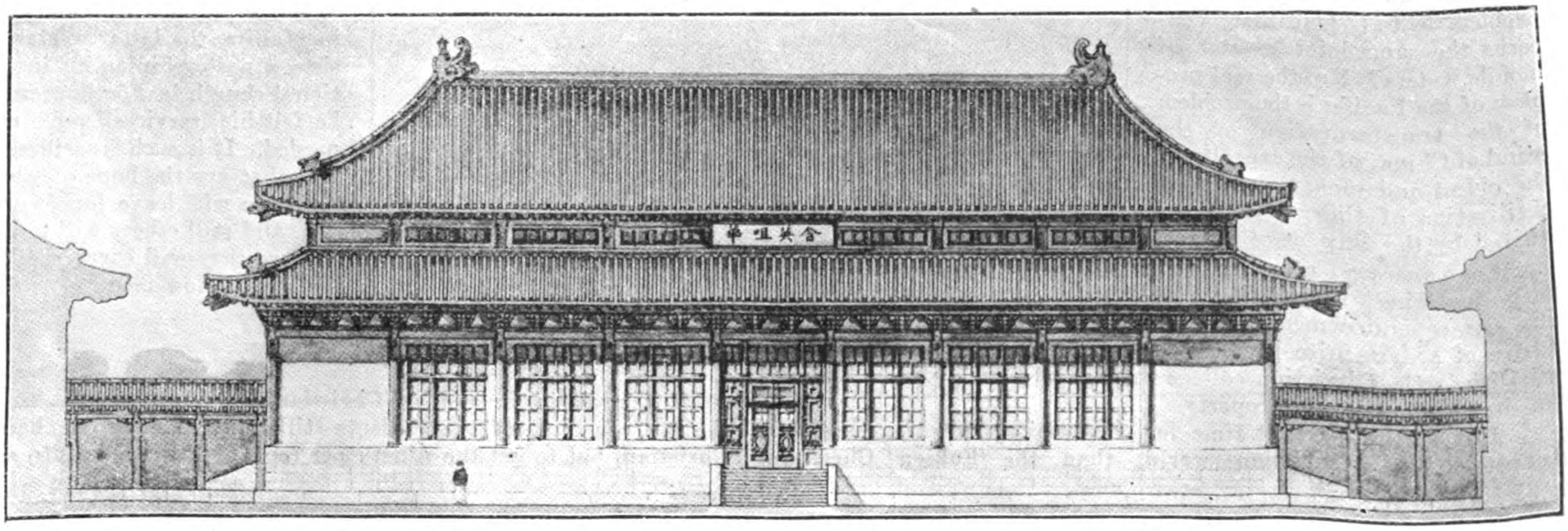
American collegians and their homes will be freed from race prejudice and have large thoughts and look out on world problems in a big way, as they share in such work as Yale is doing.



Typical Dormitory, Fukien Christian University, Foochow, China



Fukien Christian University, Foochow, China



Dining Hall, Fukien Christian University, Foochow, China

It is possible that the plant, which is already one of the half dozen leading colleges in China may become so extensive that other colleges will be invited to co-operate. Indeed, already Hamilton college has a teacher on the faculty, supported by the Hamilton community.

Within twenty years the college that is doing nothing for these backward nations, which has no message of education or inspiration for these less fortunate brothers of yellow, brown and black complexion, will be behind the times. Such colleges will be out of touch with an international era.

Fukien Christian University

Transforming the Mind of China From an Educational Base at Foochow

By Edwin C. Jones, M.A.

(President, Fukien Christian University)

" What are the bottom facts about China ! " a tourist in the East once asked Dr. Arthur H. Smith, who spent over forty years as a missionary in China.

"There is no bottom and there are no facts," was Doctor Smith's ready reply.

In that statement Doctor Smith well expressed the feelings of every one who has studied China deeply.

The only persons who would be willing to make a dogmatic statement about China are the tourists who are just landing from a boat or who have made a few months' acquaintance with the European hotels of the coast cities. China is still a mystery, a vast potentiality.

There is one bottom fact about China, however, which can be stated without fear of being presumptuous. To-day the real problem of China's future is the problem of the schoolroom. Prof. John Dewey, of Columbia University, who is now in China, lecturing at the National University in Peking, has stated this fact eloquently. "We talk glibly," he says, "about the importance of the problem of the Pacific, and even the schoolboy can quote Seward, Hay and Taft. But what do we suppose this problem to be? One that concerns the superficial waste of mobile waters? No, the real problem of the Pacific is the problem of the transformation of the mind of China, of the capacity of the oldest and most complicated civilization of the globe, to remake itself into the new form required by the impact of immense alien forces."

Consequently, every college in China has an importance not only to China, but to the world, which cannot be measured by its size or endowment. One might as well measure the importance of a dynamite bomb by its weight, as to measure the possibilities of a Christian college in China by such external things as its enrollment or property.

Just at the present time few institutions are of greater interest to the Christian world, than the Fukien Christian University at Foochow, China. Many causes conspire to make it of outstanding importance.

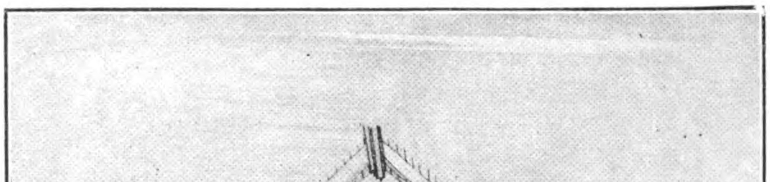
For one thing, it is the newest of the great group of five Christian union universities which spread out in China like the strategic salients of a great plan of campaign; which indeed they are.

In 1918 the institution known as Fukien Union College was incorporated under the name of Fukien Christian University. It is an impressive embodiment of the union idea of Christian education on the mission field.

Four mission boards are cooperating in the enterprise: the American Board of Commissioners for Foreign Missions, which represents the Congregational Church in the United States; the Church Missionary Society of the Established Church of England; the Reformed Church in America; and the Methodist Episcopal Church.

It comes as a distinct jolt to all the ideas of the average Church-member at home about mission schools, to realize that the Methodist Centenary program for China will put into this institution, merely as their share of a great expansion, the startling sum of $825,167 toward a total of three millions. This includes $122,667 for buildings and land, $697,667 for endowment and $5,833 for student aid. This is the only college in a province of twenty-two million population.

When we take this fact into our imagination with the help of the pictures of the new buildings to be erected, which accompany this article, we can realize that at last the Christian churches of America are attacking the problem of transforming the mind of China in an adequate and statesmanlike manner.



Interior Perspective, Anglo-Chinese College Chapel, Foochow, China

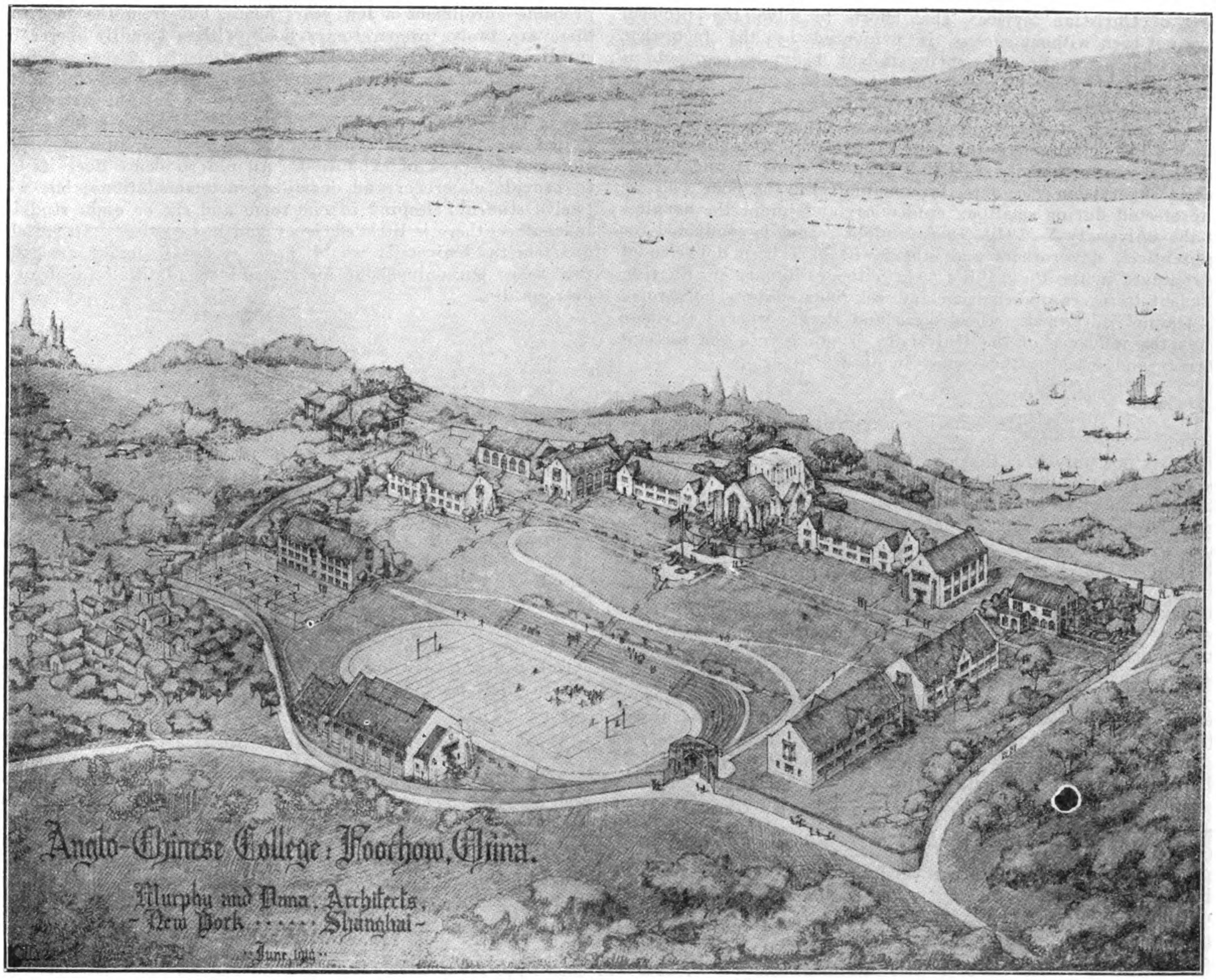
The Human Product

But life is more convincing than figures, and the strongest promise of wonderful results in the Fukien Christian University is not the impressive figure of $3,000,000, but the more impressive exhibit of the strong Christian manhood which the University is supplying for the leaders of the new China.

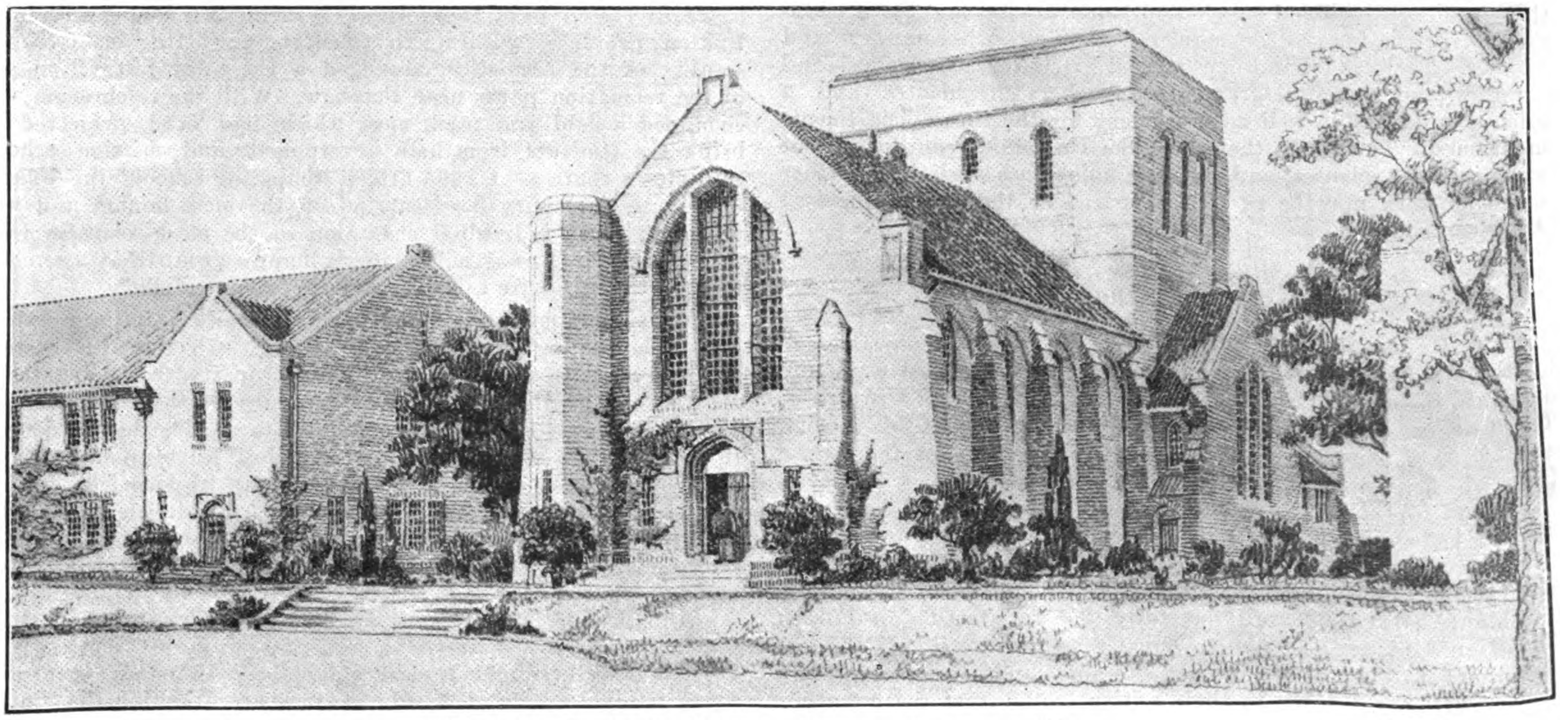
In January, 1919, the first class graduated. One student is now instructor in chemistry in the university. Three are teaching in preparatory schools, two of them planning eventually to enter the Christian ministry. The fifth refused an offer of 200 pesos a month to accept a position giving thirty-five Mexican dollars, or about one-sixth of the former amount. The reason for his choice was that, while the former position offered him a fine opportunity in a Chinese school in Manila, the latter was an assistant pastorship in an institutional church in Foochow, where he felt his services were more needed. It is such sacrifices as this that are the hope of China. Of the present senior class of eleven some will leave for America for graduate study. Others will teach, and still others will go into business or into politics; but everywhere they will carry the light of the Cross, and will labor to serve their fellow men.

Social Service

The problem in Fukien Christian University is not to get the ten per cent. of the students still non-Christian to become Christian, but to get the ninety per cent. of Christians into some



Anglo-Chinese College, Foochow, China



The Chapel, Anglo-Chinese College, Foochow, China

form of Christian service. That efforts to solve the problem have not been without success is evidenced by the fact that seventy-five per cent. of the entire student body is engaged in social service. Some of the students teach in Sunday-schools, or act as assistants to pastors in needy churches. Others lead government-school students in voluntary Bible study. Athletes conduct playgrounds in two centres. Musicians have music classes in the city Y.M.C.A. Medical students under competent supervision vaccinate, for nominal fees, the poor who are unprotected during smallpox epidemics; and under the auspices of the university Y.M.C.A., a free night school is conducted for apprentices, day-workers and others who have been deprived of advantages in the three "R's" in either Chinese or English. Student lecturers on scientific and religious subjects hold forth in temple court-yards, schoolrooms and street-corners. In these ways the influence of the University is going into the farthest corners and reaching those most in need.

A Practical Curriculum

It is not only thus that the University ministers to a needy people. In formulating the curriculum comparatively little thought was given to traditional courses of study. The ever recurring viewpoint was, "What will help the students to be useful members of the society in which they will live? Through the study of modern history, students are brought to see the world of to-day and the necessity for revision of methods that sufficed twenty centuries ago. Comparative government suggests ways of improving current Chinese forms. Biology is studied in its application to better farming, and animal husbandry and a better human race. The first course in chemistry is practical or applied chemistry. A civil engineer, teaching mathematics, makes clear the connection between that science and the everyday life of the world. In short, in each department the aim is to study sympathetically the needs of China, and to bring all the learning of that department to bear on a satisfying solution.

In solving one of China's great needs Fukien Christian University is enabled to bear a large part through the generous agency for healing, known as the China Medical Board of the Rockefeller Foundation. The Board, in addition to aiding in the sufficient staffing and equipping of already established hospitals and medical schools, is building two elaborate medical schools in Peking and Shanghai. It has its own pre-medical school in Peking, but it is also assisting two of the mission universities in the hope that students from there will study medicine in one of the several schools they are making more efficient. Fukien Christian University is one of these two institutions. In this grant are included salaries for four foreign and three Chinese instructors for the department of biology, chemistry and physics. There is a handsome annual grant for maintenance and supplies, and a capital grant for teachers' residences and a science building, as well as equipment for the three departments mentioned. Thus from the outset the University can do efficient work in these sciences, and students going into medicine or other scientific work may be as well prepared as those from the best American colleges.

A Glance at the Future

The University is enabled to do work of this high standard by the system of primary and secondary schools under mission auspices, through which students are prepared for the University. There are in Fukien province alone 27,000 pupils in this system, and 20,000 of these are boys. From this body of boys, the largest from which any university in China directly draws its students, will come for some years a large percentage of the university student body. In addition there is a large group of government school students, of which there will be from two to four millions when the government system is thoroughly established, whose desire for higher education will naturally seek satisfaction in Fukien Christian University; not to enumerate the sons of Chinese emigrants to the Philippines, Formosa and Malaysia, whose fathers will send them to their native land to get the essentials of the culture they love best. It is dangerous to estimate the probable enrollment a few years hence, but from the fact that there are twelve preparatory schools with a steadily increasing enrollment, now approximating 2,000 students, it seems safe to predict that in five years, with adequate buildings and equipment, the university will have, in the College of Liberal Arts alone, nearly 500 students. At present the University is housed in rented quarters entirely inadequate to meet the present urgencies, not to speak of expansion. An old residence does its best to provide classroom and dormitory accommodations; but with twelve students sleeping in one room and six or eight studying in another, there is little efficiency and less comfort. In suitable quarters the University would have received eighty freshmen this year; but only about forty could be admitted for fear of overcrowding.

The New Campus

In the face of these conditions it is fortunate that purchase has been possible of a beautiful site comprising over fifty acres on the bank of the Min river. One of the very first appropriations from the Centenary funds was toward the purchase of this land. On foot-hills which are landmarks for twenty miles up and down the river, will be ranged buildings with graceful Chinese lines, a constant reminder to all who pass of the Christian education within their walls. The firm of Murphy and Dana, with offices in New York and Shanghai, has planned the superb general layout and the individual buildings making up the group. Buildings will range from $25,000 to $100,000, and they will be as beautiful and as enduring as those in America costing many times as much. Construction will proceed immediately; and it is hoped in a year and a half to move to the new quarters which are so sorely needed.

Keen Brains in Sound Bodies

Besides rooms for buildings on the new site, there is sufficient well-adapted space for athletics of all sorts. A gymnasium will be one of the prominent buildings. This will front on a quarter-mile track in which a gridiron and a baseball field will be laid out. Two other gridirons and one other baseball field will be possible, besides numerous tennis courts. Making brains active and doing nothing to strengthen feeble bodies is a poor investment of energy and money. Whole men are necessary to cope with conditions in China, even more than in the United States. The University aims to send out men equipped physically, as well as mentally and spiritually, for the battle of life.

A good start has already been made in this direction, as will be readily seen from the following incident. The governor of Fukien province, wishing to celebrate in fitting manner the signing of the Armistice, arranged a three-day festival in one of the recreation parks near Foochow. With the celebration was combined a field and track meet which had been projected to bring the students from both government and mission schools into closer contact. Of the fifteen competing schools, the Fukien Christian University boys carried off the most honors and won the meet. The individual champion of the meet was also from their number. It was a hilariously happy group that assembled to have their picture taken in the dim evening light.

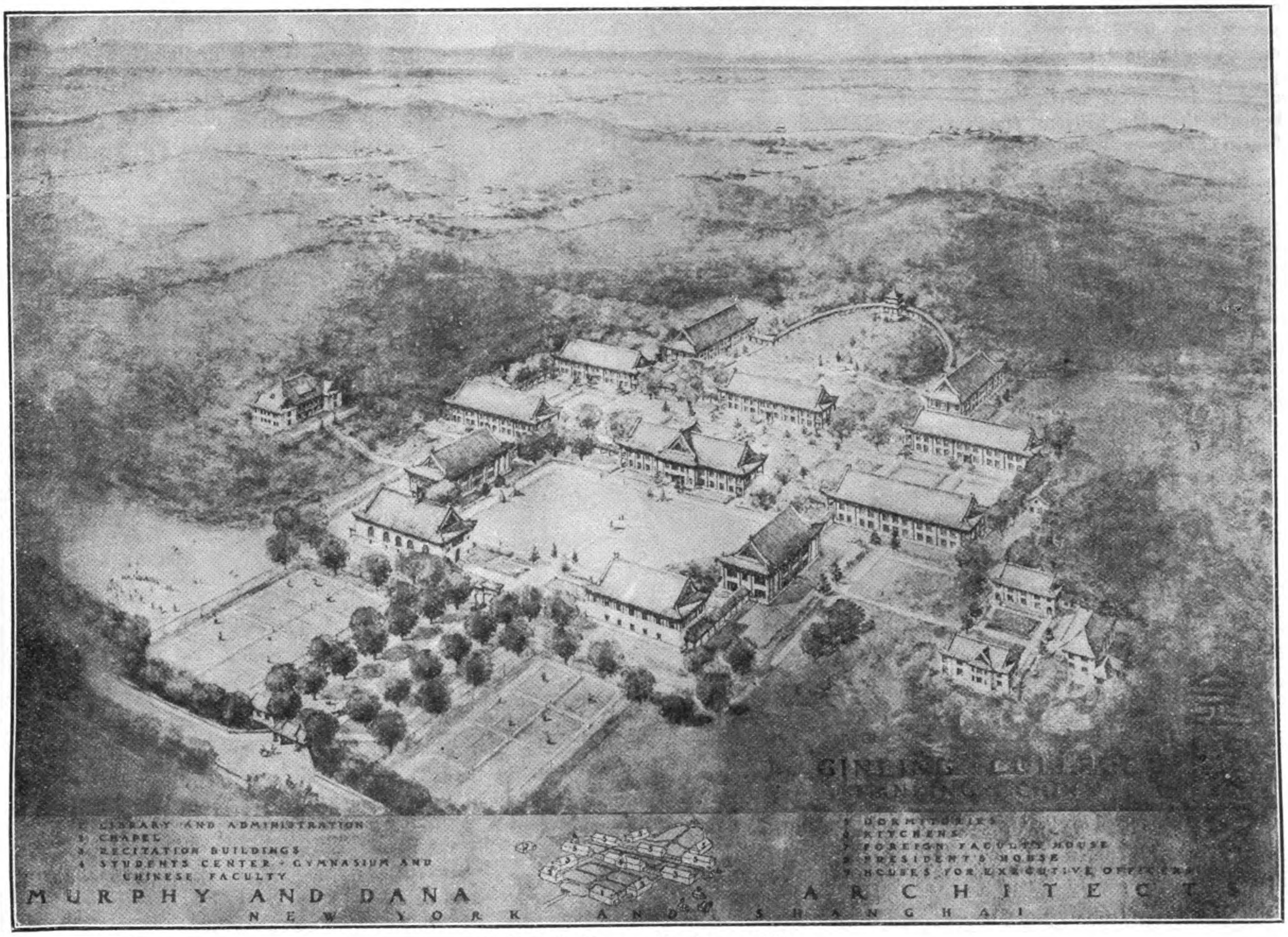
Mention should also be made of another circumstance which makes the institution truly international. In 1918 the trustees, seeking the corporate right to hold property, were granted a charter by the Regents of the University of the State of New York. This also enables the graduates to receive degrees having the stamp of a well-known institution of learning upon them. From the records which our students make in American institutions when competing with American students, it may be asserted that the standard maintained in Fukien Christian University compares very favorably with that in the best American colleges and universities.

And, in the last analysis, it is by its students that an institution is judged. These young men are going out from the University as well-trained leaders, and their influence is already being felt; even as undergraduates they are directing the student sentiment in this capital city, and in the province.

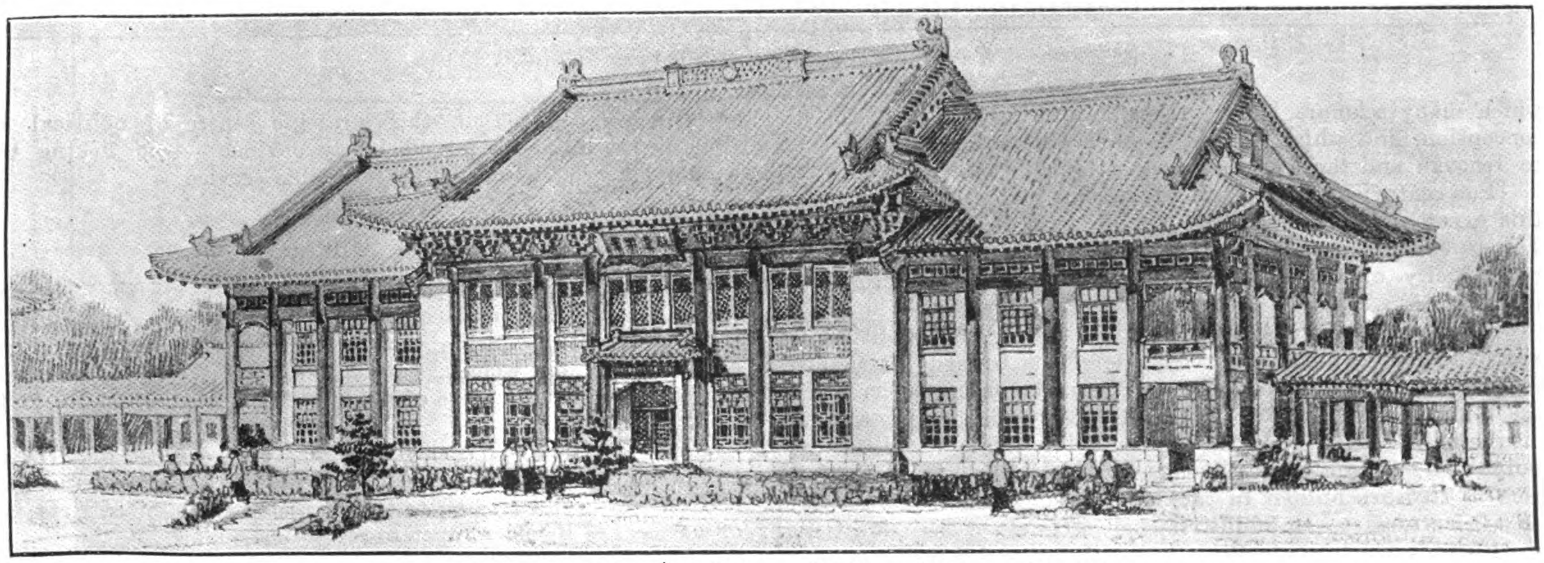
Peking University

A University in the Heart of the East

In the daily speech of the Chinese, their country is always referred to as "Chung kwo"; which, literally translated, is "The Middle Country" or "Middle Nation." Originally the Chinese believed that they were the central people of the world, all other nations being on their border; and the progress of the world-movement is making, in a new sense, the name "Middle Nation" real again. Before the United States Senate, on July 29th, 1852, William H. Seward said: "Who does not see that henceforth the Pacific Ocean, its shores, its islands and the vast region beyond, will become the chief theatre of events in the world's great hereafter?" It took a prophet to see this seventy years ago; any thoughtful readers of newspapers, books and periodicals can see it to-day.



Ginling College, Nanking, China



Social and Athletic Building, Ginling College, Nanking

The National Centre of China

Central in the life in this central land lies Peking, well-called "The Capital of Asia"—for nine centuries an Imperial City, and now the Capital of the oldest living nation and the most populous republic in the world.

In itself it is a wonderful city. The northern, or Tartar City, is really three concentric cities; the inner two being The Forbidden City and the Imperial City. Here are the ancient palaces, the government buildings and the legations. The main commercial life is centred in the Southern or "Chinese City"; yet within its bounds, in the quiet of a vast, well-wooded enclosure, is the Altar of Heaven, one of the three great worship-places in the world. Here at early morning on the twenty-first of each December, in the presence of no idol, but standing beneath the open heavens, the Emperor offered the annual sacrifice to "Heaven," or to "Shangti"—the latter a term for God which many scholars believe represents an ancient monotheistic conception, and which, to-day, is used widely in China to refer to Jehovah and the Christian conception of God.

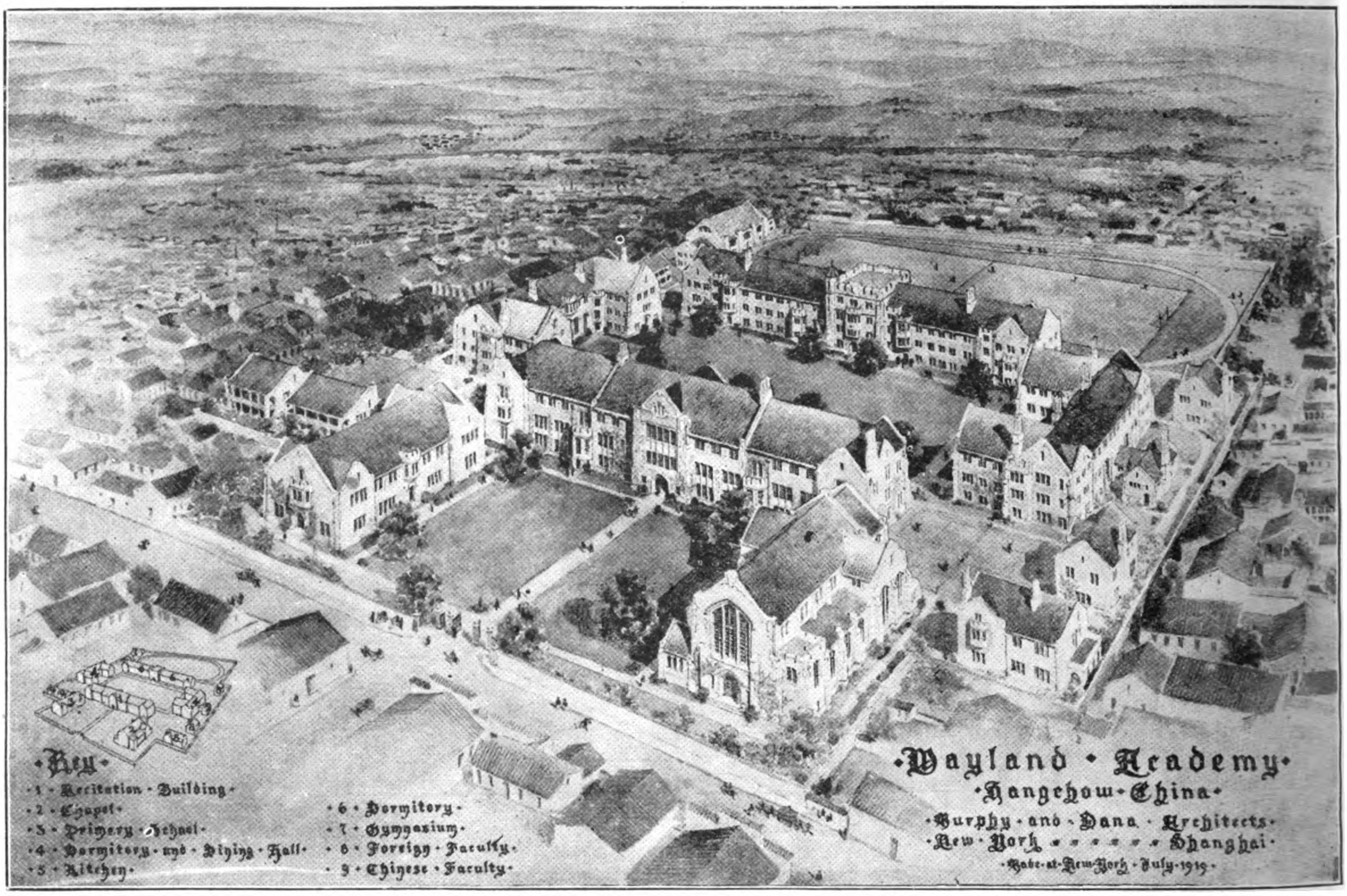
For centuries a quarter of the human race has looked toward this great and unique city of Peking with the eagerness of the Jew to Jerusalem and the Mohammedan toward Mecca. In this storied city of the East is to be seen to-day the ferment of many forces.

Here are the intrigues of foreign powers for political or economic control. Here are felt the efforts toward internal reform among the better spirits, which are becoming articulate in the remarkably organized and sustained student-movement, the most significant movement in China to-day. Here at this vantage point men may study a vast nation—economically poor, potentially rich in treasure hidden in the soil; just beginning to pass from an agricultural to an industrial age. Here are the educational institutions which are making the capital one of the great student centres of China.

Add to all this an unending succession of the ancient monuments and picturesque palaces of the past, the vivid cosmopolitan life of the present, and the thrilling promise of the future greatness that awaits Peking; and the resident, the traveller or the student of world-affairs recognizes that here is the most fascinating city of the Orient.

China's Educational Centre

With the fervent nationalism now stirring among the young men and women of China, it is no wonder that they are coming to Peking in large numbers for their education; it is estimated that there are more than 20,000 students in Peking at the present time. It is significant that the Rockefeller Foundation, after deciding to aid China by furnishing her with the most scientific type of medical education, located its magnificent medical college in Peking. The importance, to the Christian Movement, of being worthily represented in this strategic centre of political and educational influence is sufficiently obvious. And Peking University has been founded to render this service.



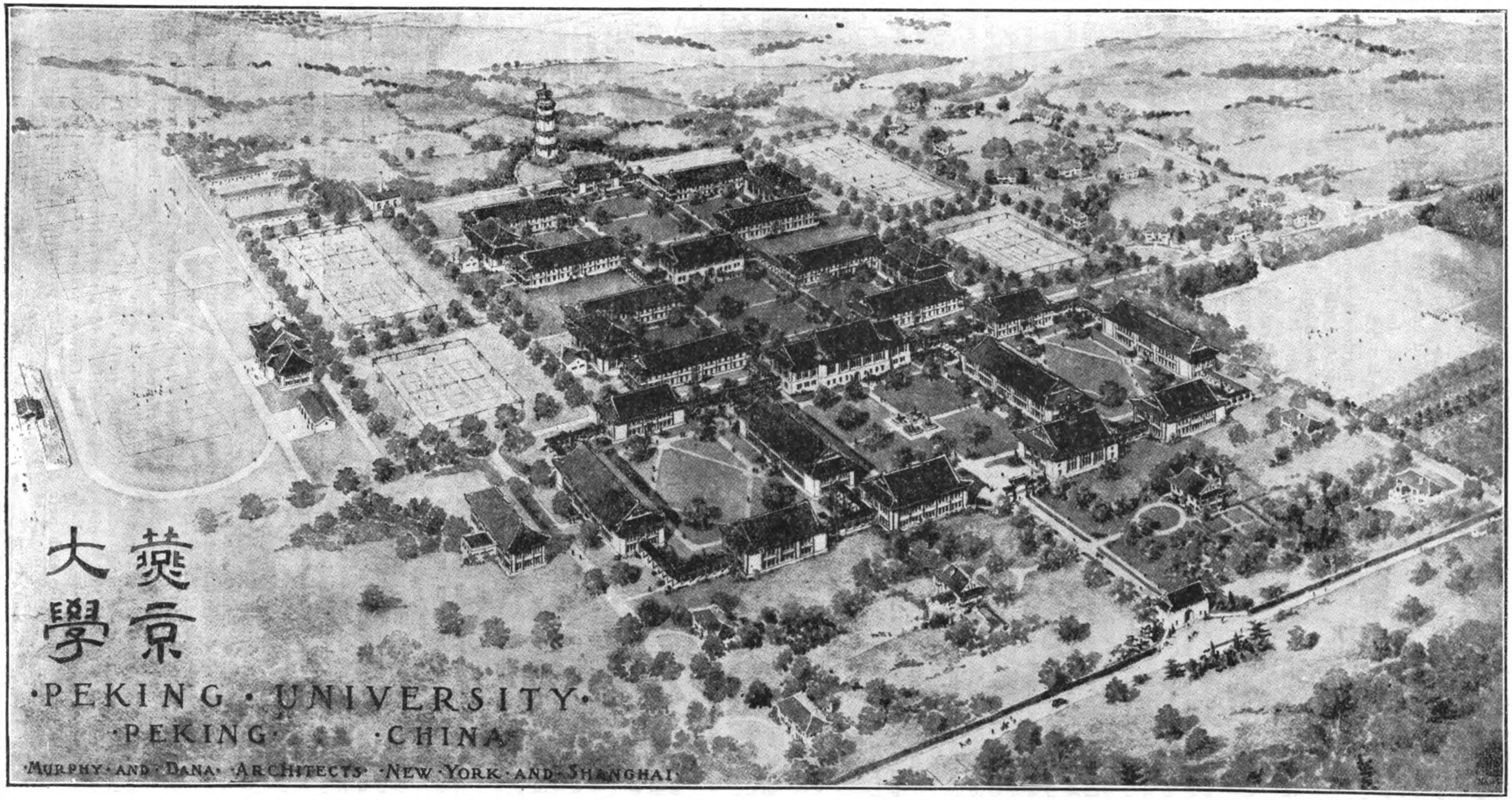
Wayland Academy, Hangchow, China

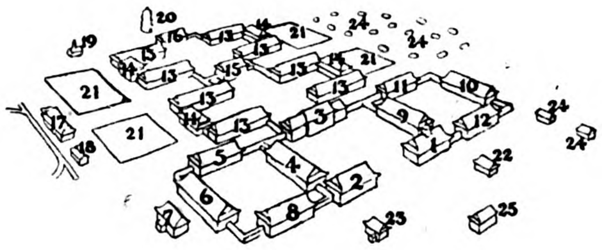
Peking University

Peking University represents a union of all the Christian institutions of higher learning in or near Peking. These institutions include two colleges and one theological seminary for men, and a college for women. Upon this solid foundation is being reared the super-structure of a great university in Peking, "The Capital of Asia."

The University consists at present of a College of Arts and Science, with a course standardized under the laws of the State of New York, and leading to the degree of Bachelor of Arts; and of a School of Religion, open to college graduates.

It is hoped soon to add a post-graduate course in Arts, and other graduate courses, such as a School of Journalism, a School





1 CHAPEL
2 ASSEMBLY & STUDY HALL
3 LIBRARY & ADMINISTRATION
4 SCHOOL OF ARTS & SCIENCES
5 SCHOOL OF JOURNALISM
6 SCHOOL OF EDUCATION
7 PRACTICE SCHOOL
8 SCHOOL OF RELIGION
9 CHEMISTRY & PHYSICS LABORATORIES
10 BIOLOGY AND GEOLOGY LABORATORIES
11 SCHOOL OF AGRICULTURE AND FORESTRY
12 VOCATIONAL TRAINING
13 DORMITORIES
14 DINING HALL
15 Y.M.C.A. AND SCHOOL CENTRE
16 INFIRMARY
17 GYMNASIUM
18 FIELD HOUSE
19 POWER HOUSE
20 WATER TOWER
21 TENNIS COURTS
22 PRESIDENT'S HOUSE
23 VICE-PRESIDENT'S HOUSE
24 FACULTY RESIDENCES
25 MAIN ENTRANCE

of Education, and various technical schools. Special departments adapted to existing conditions in China are also being planned, such as Sociology, Political Science, Industrial Chemistry, Agriculture, Forestry and Animal Husbandry; and a Pre-Medical course, preparing students for the rigid requirements of the Rockefeller Medical College.

With the University is affiliated Yen Ching College, the department of Arts and Science for Women, under the direction of Dr. Luella Miner.

What Peking University Seeks to Do

Hon. Paul S. Reinsch, for the past six years American Minister to China, said:

"Altogether there appears to be no opportunity in educational life of to-day of quite such scope and possibility as that of a Christian University cultivating liberal and scientific studies at the Capital of China."

Julean Arnold, American Commercial Attache at Peking, said:

"The leaders of the new China must be men and women of strong Christian character. One could not conceive of a better opportunity for training such leaders than a first-class University, of national importance, situated at the Capital, and under Christian auspices."

The hope of China lies in the training of a new type of young manhood and womanhood who have the education and the character to bring about a better political and social order. The University has been founded by Christian leaders of the West in order to furnish the best quality of intellectual and religious leadership for China; and its aim is to train men and women of the spirit and quality that can create a new China.

The Immediate Future

The plants of the two original colleges have been given over to two flourishing Preparatory Schools from which many future students may be expected. But the University itself is housed in entirely insufficient temporary quarters It is now necessary to erect and equip buildings adequate to the surpassing possibilities of the new day, and worthy of the Christian Movement centring in China's capital—the Heart of the East.

A magnificent new site of 150 acres has been selected just outside the West wall of the city; and plans by the Architects, Murphy and Dana, of New York and Shanghai, have been approved for a permanent plant for the University which will require $2,000,000 to build, with an additional $1,000,000 for the Women's College adjoining it. The accompanying bird's-eye perspective shows the University as it will look when it has developed to 1,000 students; a further expansion of 1,000 additional students can be housed in four more dormitory units, in the four spaces shown laid out as tennis-courts, the Women's College, not shown in the picture, will be in the open space at the right.

As there is a general agreement that it is especially desirable, in Peking, the Capital City, to preserve the splendid heritage of Chinese architecture, the new buildings for Peking University are designed in an adaptation of the native style as exemplified in the beautiful buildings within the Forbidden City. The buildings will be of fire proof construction throughout; and the structural concrete columns will show on the outside, in true Chinese fashion, with tinted stucco panels between. The roofs will be of bright-colored Peking tiles.

Not only the individual buildings, but the general plan as well will be thoroughly Chinese, with a series of spacious rectangular court-yards, laid out on long axis and vistas. The general plan is as follows:

Formal avenue of approach, from Chinese gate at main entrance on the east, leading up to main academic quadrangle.

Secondary academic quadrangles, adjoining the main quadrangle on the north and south.

Dormitory group, continuing on main axis; arranged in small quadrangles, with a dining hall and kitchen for each pair of dormitories, forming four units for 256 students each; with a students' centre and Y.M.C.A. at the centre of the whole dormitory group.

On the west side of the property, the athletic field, with gymnasium, field house and grand stand.

On the east, the faculty residential group, for both foreign and Chinese faculty.

On the north-east corner of the property, separately walled in, the Women's College, separated from the main academic group by a broad avenue leading from the highway to the faculty residential group.

At the west side of the property, on the end of the main axis, a water-tower in the form of a pagoda; which will serve as a landmark for many miles in all directions.

Covered ways join all the buildings in a continuous circulation.

Governing Body and Officers:

The Board of Trustees of Peking University are: Luther B. Wilson (President), Arthur Perry (Vice-President), Eric M. North (Secretary), E. M. McBrier (Treasurer), Edward Lincoln Smith (Chairman, Executive Committee), Jas. L. Barton, Arthur J. Brown, Thomas Cochran, John F. Goucher, F. H. Hawkins, William V. Kelley, Frank Lenwood, William P. Merrill, Edward C. Moore, Frank Mason North, Richard Roberts, John L. Severance, Mrs. J. M. Avann, Mrs. Geo. M. Clark, and Mrs. O. R. Williamson.

The President of Peking University, Dr. J. Leighton Stuart, was born in China, and has spent most of his life here with the exception of the period of his education in America. He is a graduate of Hampden-Sydney College and of Union Theological Seminary, with an honorary Doctor's Degree from the former; Dr. Stuart's Greek Reader and Lexicon first made possible the use of the original language of the New Testament for Chinese scholars.

The Vice-President, Henry W. Luce, has been engaged for twenty-two years in educational work in China, during which he has been Vice-President of Shantung Christian University, and for the past two years Secretary of the China Christian Educational Association. He is a graduate of Yale University, and of Union and Princeton Theological Seminaries, with a Master's Degree from Yale.

The Secretary, W. Reginald Wheeler, has been engaged in educational work in China for four years, during which he has been Secretary of Hangchow Christian College. He is a graduate of Yale University and of Auburn Theological Seminary, with a Master's Degree from Harvard.

Ginling College

An Institution for the Higher Education of Chinese Women at Nanking

Ginling College is located at Nanking, China, taking its name from the old classical name of the city. Nanking is a natural centre for educational work, both on account of its geographical position and on account of its language; lying between the great Mandarin-speaking centre of inland China, and the districts of the Wu and other coast dialects.

The foundations of Ginling College were laid not in one institution fostered and developed to meet local needs, but in the schools of Central China, which have been proving for years that Chinese girls were capable of higher education and were nobler and more useful women for having enjoyed such advantages as were offered. These schools have been the pioneers in the field of college education for Chinese women, and Ginling College is following the trail they have blazed In order that larger opportunities and better advantages for college work might be offered to Chinese women, the leaders in the middle schools of the Yangtze Valley promoted this union college for women.

In November 1913 the representatives of the five Mission Boards which had agreed to co-operate in the college met in Nanking and formally organized the Board of Control. Steps were taken to open the college as soon as possible; and the first class was admitted in September 1915. The college has no preparatory department, looking to the existing middle schools for students ready to do college work.

The Board of Control has thus stated the purpose of the college:

"For the furtherance of the cause of Christ in China; for the advance in education necessary to provide trained leadership; for the education of Christian women for Christian service; and for the promotion of higher education under Christian influence; this college is founded."

Has Board of Control

The Trustees of the University of Nanking, having added to their number five women who represent the Board's co-operating in Ginling College, act as the college trustees; delegating certain powers to the Ginling College Committee, to whom all questions relating to the college are referred. The Board of Control administers funds received from Trustees and Boards; appoints president and faculty; adopts the course of study, and determines entrance requirements. An Executive Committee of five is elected annually, with power to act on all questions relating to immediate needs of the college.

The students are organized for self-government, and bear the responsibility for ordering the daily life within the college, thus training themselves in self-control and co-operation. Class organizations plan for various college entertainments; a current-events club meets every other week, alternating with an English club. The college Glee Club has weekly rehearsals and gives two concerts yearly. Frequent exchanges of hospitality between the faculty and student-groups help to foster friendly relations. Lectures by outside speakers on various subjects related to the college work help to broaden the outlook of the students

The students attend Sunday services at the different city churches. Faculty and students attend a daily chapel service at twelve o'clock, led by the members of the faculty and by occasional visitors and outside speakers.

All students as soon as possible after entrance are given a thorough medical examination and every effort is made to preserve and improve their health. Regular exercise is required three times a week in classes under a physical director. Tennis, volley-ball and other games are arranged for, and all forms of open-air activity are encouraged.

For admission to the freshman class candidates must offer eighteen points of middle-school work—a point being a full year's work in a subject, five periods per week of class-room work with equal time required for preparation. All students are examined upon entrance in Chinese and English. These examinations are general tests of ability to do what is required in the work of the first year.

Library in English and Chinese

The college has a carefully selected library of over twelve hundred volumes in English and over five hundred in Chinese, which is increased annually as the work calls for more books. Twenty-five magazines and periodicals are provided for the use of faculty and students.

The college has occupied up to the present a large official residence in the south-east corner of Nanking. The college has now outgrown these quarters, however, and land has been purchased near Nanking University for a group of buildings to provide for four hundred students. The accompanying bird's-eye perspective shows the completed group, in the Chinese style, as planned by the Architects, Messrs. Murphy and Dana, of New York and Shanghai; the other picture, the Social and Athletic Building, illustrates how well the beautiful Chinese architecture can be adapted to the requirements of modern college buildings.

The President of Ginling College, Mrs. Lawrence Thurston, has been engaged in educational work in China for eighteen years; and is a graduate of Mt. Holyoke College. Other members of the faculty are graduates of Smith, Vassar, Goucher, Oberlin, Bryn Mawr, Michigan, Illinois and Columbia.

The Anglo-Chinese College at Foochow

A Preparatory School for Boys

One of the most important of the educational institutions in Foochow, the capital of the province of Fukien—a noted centre of educational work—is the Anglo-Chinese College, supported by a union of several mission boards. This institution is now housed in a group of well-built buildings on the high land overlooking the Min River, not far above the beautiful stone "Bridge of a Thousand Ages," celebrated in the art and literature of China.

When the present buildings were planned, it seemed that they would be adequate for all future needs; but the institution has done such good work, and expanded so rapidly, that it has now become necessary to seek larger quarters, providing accommodations for at least 500 students. As it proved impracticable to extend the present group, a new site has been acquired a little further up the river, commanding a fine view up and down stream, and across to the left bank, where most of the teeming native city is located. In the fall of 1918, Messrs. Murphy & Dana, of New York and Shanghai, were engaged to design the new group of buildings for this splendid site; the accompanying illustration shows how the group will look when completed. In accordance with the strong desire of the President of the College, Dr. Gowdy, the new Anglo-Chinese College buildings have been designed in the collegiate Gothic style, recalling the beautiful buildings of England in which Dr. Gowdy received his own education.

While many of the students will go, on graduation, directly into their life work, it is expected that an increasingly large number of them will continue their education in the great new Fukien Christian University, described and illustrated elsewhere in this issue.

Wayland Academy

A School for Boys at Hangchow, China

In the city of Hangchow, a half-day's train journey south from Shanghai, and not far from the beautiful West Lake for which this ancient capital of China is famous, is situated Wayland Academy—a school for Chinese boys, supported by the American Baptist Foreign Mission Society. At present the school is housed in some cheap buildings, which served well enough during the preliminary period of the school's growth, but which are now totally inadequate. Two years ago a movement was started to replace these buildings gradually by a group of modern buildings; and Messrs. Murphy and Dana, of New York and Shanghai, were engaged to study the problem and work out a scheme not only for the buildings needed at first, but for the entire future development. The accompanying illustration shows how this group, in the collegiate Gothic style, will look when completed.

The importance of athletics in the education and development of the youth of China is illustrated by the inclusion in this group of an athletic field, including running track, even though the restricted area of the property has made it necessary to use three-story buildings, and to condense them into units of greater length than is customary.

At present there are about 200 students in attendance. The group shown in the accompanying illustration is planned to accommodate a total of 500 boarding students and 200 or more day scholars. As the chapel, seen in the foreground, will be used for outside religious work as well as the ordinary school services, it has been planned to seat a thousand; and will be one of the most imposing Christian church buildings in the province.

Coal Mining in Anhwei

THAT China is a veritable Aladdin's cave in regard to coal is universally admitted, but even experts seem to differ as to the exact distribution of this almost inexhaustible supply. The single province of Shansi, for example, is reputed to contain enough coal to provide the whole world for one thousand years, but the wealth of coal strata in other provinces is even to-day but imperfectly known. Anhwei, according to foreign experts, is only a variable quantity in this respect, though Chinese accounts paint a more glowing picture.

One foreign estimate (1910) says that "coal exists in considerable quantities, but it needs energetic development; and friendly co-operation between the foreign concessionaires and the local Chinese is absolutely necessary to success. During the last fifteen years the coal from the Chihchow mines, and from those of Fenchang, Ningkuo and other districts, worked by primitive methods, has been exported in decreasing quantities."

A Chinese official statement throws further light on this subject. For, according to a report detailed by a mining expert of the above Ministry, the picture is even less roseate. The report refers to conditions in Hsuanchong district and shows the criminal stupidity of obstructionists all around. This district is situated within the jurisdictional circuit of Wuhu, a treaty port on the Yangtze River, the foreign settlement of which was opened in 1905. The district city is distant from Nanking, the Southern Capital, 420 *li* (three *li* make an English mile) by water; from Anking the provincial capital, 400 *li*: from Ningkuofu, on the south-east, 90 *li*: and from Taipingfu, on the north-east, 240 *li*. (The latter city is a town of schools and military, with native iron and copper works and some manufacturers of vermillion.)

In this district fifteen capitalists have applied for permission either to prospect or to mine for coal in eleven distinct places, but so far it appears only two have been given the requisite official permission to go ahead. Consequently of 25,275 *mow* (or 4,212 acres) involved in these applications less than 2,000 *mow* are being seriously looked into. The rest is still buried under the pyramid-like opposition and obstruction of the officials concerned—from the district magistrate or provincial mining bureau to the Ministry in Peking.

In some cases operations had already begun before the benumbing hand of officialdom descended upon the unhappy fortune-seekers; in others everything had been got ready, and all that was necessary to produce wealth was the preliminary official permit so to do. But the permission never came or the official ban was never lifted, and added to this was the Chinese knack of irresponsibility—the successor never willing to do or undo his predecessor's Gordian knots. In the circumstances, the coal resources are still awaiting the day when the magic hand of an enlightened officialdom will provide the open sesame and then the story of mining in this or any other province in the Republic will be totally different.

To show the possibilities of the future in this district we will outline the present conditions in three of these places. In the ordinary case coal mining in this part of the country ought to be a paying proposition, since the district is well served by good communications by either road or water. For example, transportation by water is served by either steam-launches, sometimes as often as once a day, or by ordinary junks if in winter months the streams are too shallow for launches. In the near future if the proposed railway between Nanking and Changsha (capital of Hunan Province) is completed, it will solve further this problem of transportation, as the line will also go through this district. The climatic conditions are none too severe in either summer or winter, and work can continue the whole year round. Timber and vegetation abound in this locality or in the vicinity: so the cost of timber for propping, etc., is inexpensive.

On the other hand, there is the great incubus of the *likin* taxation, the rules of which are governed by orders issued by the Ministry of Agriculture and Commerce in Peking. In addition there are the following local impositions: (1) Mining area tax, assessed at five cents per *mow* per year on areas not yet being developed; (2) mining production tax, assessed at thirty cents per *mow* per year on areas which are actually being developed, and (3) mining royalty, levied at one and a half per cent. of the actual market value per picul or one hundred catties. Between Hsuancheng, the production locality, and the destination of the coal there is plenty of red tapeism, and even as near as Wuhu, the nearest treaty port, which is only thirty English miles away, the challenge of at least two *likin* stations will have to be answered by the payment of the proper fees, etc. Then, arrived at the stipulated destination, another small contribution needs to be made to the provincial treasury in the form of Destination Tax—namely, 0.005 cent per picul.

Niu-tzu Shan (Cow and Calthrop Mountain) Mines

The area comprised in these mines measures over 13,538 *mow*, and is now claimed by two owners: one Mr. Ch'en, for 1,430 *mow*, and one Mr. Wu for 12,108.61 *mow*. These mines first became known during the Ming Dynasty (A.D. 1368-1644)—a fact which is proved by the existence of numerous old pits. In 1910, the year preceding the Chinese Revolution, a Mr. Ch'eng first conceived the idea of working them on a stock company basis, but the scheme fell through owing to the delay in obtaining proper official recognition. Until 1913 the mines changed ownership three or four times, but in that year an Industrial Development Company was established and Mr. G. C. Boume, an English mining engineer, was engaged to prospect for coal, etc. The following year the present Mr Ch'en applied at the Peking Ministry for the necessary permission. At the same time Mr. Wu, representative of the Industrial Development Company, also applied at the Ministry. On a technical ruling the Ministry gave the permission to Ch'en but withheld it from Wu, although the latter's company had been first registered at the Mining Bureau of Anhwei Province. After much controversy Wu consented to Chen's claim, since the latter's area was considerably smaller, and Ch'en was ordered to pay $8,215 to Wu as compensation. Chen demurred and an injunction order having been decreed against him until Wu had first been compensated, the matter reached a complete deadlock and permission is still withheld from both applicants.

According to investigations in the mines operated by the above Ch'en, coal was discovered at a depth of forty feet from the surface ground, the seams being of an average thickness of two feet. The formations run from north-east to south-west and then dip to south-east at an angle of 20 degrees. There is abundance of coal in this region. In addition to limestone there is also silicon, and near the foot of the hills also some faint traces of iron which, however, are of practically no value. The coal produced here is black and light, emitting little smoke. It is not so easy to burn as the "smoky coal" and so is more durable. But the amount of heat generated is considerable and is best suited for stoking high grade furnaces or boilers on board warships. The following is an analysis of such coal made by Mr. Boume:—

Carbon	82%
Density	1.37
Ash	478%
Nitrogen	8.47%
Hydrogen	4.75%
Heating Point	125°F.

The mines are worked entirely by primitive methods. The pits are sunk on an inclined plane, and as soon as coal is reached the excavators dig at right angles to it. On an average the daily excavation is three feet, the height and breadth being each four feet five inches. Fir is used in the mines for timbering and is placed at intervals of two or three feet. These pillars or beams measure five inches in diameter and are all procured locally.

their cost being $24 per hundred, plus an extra $3 odd for transportation and sundry charges--in other words, only 27 or 28 cents per timber. To bail or pump out the water in the mines five bamboo fly-chains are used, similar in construction to those worked with the feet by Chinese farmers all over the country to irrigate their fields. Each fly-chain is put under the charge of one man, and there are five men to each shift for both day and night. The miners go up and down bamboo ladders and carry away the coals in bamboo canoe-shaped baskets. Each of these baskets can hold 80 catties of coal. At 20 or 30 cents a piece, they are good for one week's use. Because the output is still small, the coal is simply piled up outside the pits until the time arrives for carting it away.

In the mines the men use Chinese vegetable oil lamps which are supplied by the mining company. The miners work twelve hours a day, the majority hailing from the neighboring province of Hunan. Where the digging is difficult, the men are divided into three shifts of eight hours each. The head miner gets $10 a month, whereas the others and water-pumpers, etc., receive 22 to 25 cents a day. Each person provides his own meals. In 1917 the average production was 20 to 30 piculs per day.

According to the company's prospectus the nominal capital is to be $500,000 divided into 5,000 shares of $100 each. But the legal status of the concern not having been properly adjusted, the actual paid-up capital is perhaps not much over $5,000. What is immediately wanted is an early settlement of the quarrel between the two applicants Ch'en and Wu, either in the form of amalgamation or incorporation.

The Mien-niu (Sleeping Cow) Mountain Mines

The area comprised here measures 2,104.60 *mow* and there are four applicants for mining as well as prospecting rights. As in the case of the Niu-tzu Shan mines, these mines are known to have been first worked during the Ming Dynasty. In course of centuries most people seemed to have forgotten all about them until a few years ago the natives of the locality suddenly struck coal within almost a few feet of their own doors. Two of these at once began to dig for coal without so much as obtaining any official permission therefor, a distance of only a few hundred yards separating the two "mines." Then the officials got wind of their clandestine operations and at once prohibited further working, and as a penalty for violating the mining laws each owner was fined $500. Other merchants got interested but are still unable to raise the official interdiction. Since then the capitalists concerned have not been able to settle the matter amicably between themselves, and the mining rights are still under litigation.

The quality of the coal here is inferior to that of the Niu-tzu Shan mines, being more smoky and bearing traces of sulphur. The heat produced is not inconsiderable, but, after burning, leaves a great deal of hard ash. It is therefore serviceable for stoking ordinary boilers and furnaces, etc. The method of digging is similar to that adopted in the other mines, and in those opened clandestinely by the above two villagers, coal was reached at a depth of forty to fifty feet. The exporting centre for this locality is Shui-tung-chen, distant 15 *li* by land. The coal is first conveyed from the producing area to this centre by either porters or mules or carts and thence by junks to other destinations. The water communication here is not, however, so convenient as in the case of the Niu-tzu mines; only junkloads of 30 or 40 piculs as compared with launch or junkloads of four or five times this amount. The future completion of the railway from Nanking to Ch'angsha which will run to as near as two or three English miles of these mines, will also solve the transportation problem.

The local timber used is pine, which is worth 200 copper cash for every one hundred catties. Each beam or pillar requires 200 catties of pine, or a cost of 400 cash. The bamboo fly-chains and bamboo baskets used here are similar to those used in the Niu-tzu Shan mines, except that the baskets of the Sleeping Cow Mountain hold from 50 to 60 catties of coal. The cost of transportation from the pits to Shui-tung-chen, the exporting centre, is as follows:—

Porters for every picul	10 cents
Carts for every three piculs	10 cents
Mules for every 180 catties...	10 cents

From Shui-tung-chen by junks to Wuhu the freight per picul is 20 cents. Each junk is capable of holding only 30 odd piculs and the journey to Wuhu (going down stream) requires two and a half days. During the months of November to March, when the water of the river is low, no junks are available and this proportionately increases the cost of land transportation, etc.

Each of the two villagers' mines has over 20 men working and these are paid 20 cents a day, including meals. The average production is about 12 or 13 piculs of coal per day. Between the two, from May to December, 1916, they are credited with a total output of 15,000 piculs. The amount of capital subscribed for this concern is $4,000 each.

The Shuihsiang (Water Lane) Mines

This is one of the two officially sanctioned mines, its permit dating from November 11th, 1915. The owner is Mr. Yang Hsi-fu, and it comprises 277 *mow* of land. It was first discovered about the end of the Ming Dynasty or the beginning of the 17th century, this being also proved by the number of old pits all over the locality. In 1906-1907 a Tsing K'ang Company started prospecting operations, and coal was reached at a depth of 150-ft., the output totalling four to five thousand piculs. Towards the end of 1913 the present An P'ing Company arrived on the scene and forthwith applied for the requisite official permission at the provincial mining bureau, etc. Considerable red tapeism had to be gone through and two years after the permit was granted by the Ministry in Peking.

As it is situated at present, it is fairly well served by communications. Its nearest embarkation point is San-li-tien (Three *Li* Shop) only two miles away, wheras Shui-tung-chen—exporting centre for the Sleeping Cow Mines—and the district city Huan-ch'eng are only distant 25 *li* and 40 *li* respectively. The roads are good for both carts and sedan-chairs. Between March and the latter part of October, when the rivers are swollen, big junks laden with two or three hundred piculs each, can navigate direct to Wuhu. If the rivers are low during the other months, there is still enough water for boat loads of 50 or 60 piculs to be carried away. As the mines get more prosperous in the near future, a light railway may be constructed between the pits and San-li-tien, the point of distribution, so as to facilitate further the problem of communication.

When the present mines were first developed in 1913 the methods employed were the usual primitive appliances, *e.g.*, feet-driven bamboo fly-chains to bail out the water (these were gradually increased from four to forty as the excavations reached greater depth and simple natural means of ventilation, etc. Subsequently when the amount of water encountered at a depth of 200-ft. was more than could be coped with by the native fly-chains, modern pumps were installed, as well as boilers and a wind-mill for operating the ventilators. The inclined plane formation of the pits is preserved and a small railway truck has also been erected within the two shafts. The windlass system of lowering and raising the coal cages has also been installed.

Up to the end of 1917 no coal was reported as having yet been reached, though there was no lack of limestone and other allied stones. So the quality of the coal which could be mined here and the abundance of the deposit are yet to be ascertained. But fragments of coal have been picked up at the foot of the hills near by and these are light and hard, which seem to be of a superior grade to those of the Sleeping Cow mines. The mining area extends N.E.S.W. and dips towards the N.W. at an angle of 30 degrees.

The An P'ing Company has a paid-up capital of $100,000. It employs on the average a monthly total of 428½ men or a payroll of $519. These include 40 miners each drawing $8.00 per month, four engine men, two foremen, three carpenters, two cooks, two pump men, two firemen, etc. The indoor staff consists of over ten persons, including the General Manager Mr. Yang Hsi-fu himself, a mining engineer and a medical practitioner.

These receive an aggregate salary of $348 per month, that of the Manager, $100, being the highest. The mines being rapidly modernized, there are two boilers purchased at Tls. 1,350 each. Each consumes two and a half tons of coal (bought from the Sleeping Cow mines) every 24 hours and is capable of generating 128-150-lb. of steam. A carpenter's shop is also provided for repairs, etc. The timbers used for propping, etc., are also pine purchased locally, the price being one dragon dollar for every 450 catties. The gun-powder used for excavation purposes comes to 40 cents per catty, being a mixture of one part of sulphur (this costs from $4 to $18 per picul) and two parts saltpetre (this costs $47 per picul).

It appears that the present mining company was embarking upon a speculative adventure when it started mining operations. No thorough prospecting had been done, but the presence of the centuries old pits and the superior quality of coal fragments picked up in the immediate vicinity were enough for the promoters to clinch the argument. They had hoped to sight the valuable mineral when they dug to a depth of over 100-ft., but to their great disappointment no coal was seen even at a depth of over 500-ft. Meanwhile the expenditure involved has aggregated well over $80 000. The promoters, however, are still hammering at it, as they all had much previous mining experience in Manchuria. So it is to be hoped that for their perseverance, that rare virtue lacking in Chinese industrial life, if for nothing else, their efforts will be rewarded.

Reconstruction of French Industry

Steel

The French steel and iron industry is faced by an eight-to-ten-years' task of reconstruction, says the Associated Press correspondent visiting the devastated regions of France.

Engineering experts, however, say the country's steel and iron production may be much quickened by the mining and metal-treating plants of Lorraine, returned to France under the terms of the Versailles treaty. The seriousness of the loss to the industry by war, nevertheless, is heightened by the great necessity for metal construction throughout the liberated districts and the dependence of nearly 150,000 inhabitants of these regions upon the blast furnaces and metal mills for a livelihood.

In Valenciennes, Denain, Trist, St. Leger, Fresnes, Anzin, and other towns of this district, the destruction suffered as a result of the conflict is estimated at 98 per cent., including the obliteration of the Denain and Anzin works, which were the most important in France.

Of the more than 500 small metal-treating and metal construction plants of the devastated region, Government reports show that 47 per cent. have resumed work, but with only 14 per cent. of the pre-war force. This does not include the large plants, which alone are said to be capable of meeting the country's chief needs in the way of structural material and important machinery taken away or destroyed in the course of the war.

No note of pessimism is intended, it is said, by engineers who forecast a long period of reconstruction before the nation can regain her former place in the iron and steel industry. These men, in support of their position, cite the fact that the work of clearing away the débris of war has not yet been begun at the largest mill, and they say that this is due to the necessity of designing a huge plant, with equipment to cost millions of dollars, and to other preparatory considerations. Actual accomplishments to this end, they say, are being delayed also by the general conditions holding up all construction projects, such as lack of transportation facilities, labor troubles, and shortage of coal and fuel.

It is asserted, however, that progress will be certain and steady with the attainment of half production within five years.

At present many of the smaller plants are said to be devoting their output to the most needy fields. In some instances several small concerns have combined their equipment, inadequate for separate operation, and have thereby created a group of little mills and shops capable of rapid action and able to help in some measure in supplying the crying needs for machinery of all sorts.

Some of the bigger companies are said to be acting deliberately because of the high prices demanded for the equipment necessary for their plants. The unfavorable rate of exchange also, it is stated, has added to this disposition to hesitate, together with the hope that prices will come down within two or three years.

Textile

Forty thousand persons are at work in the French textile mills which only a few months ago were razed or looted by the Germans of their wonderfully delicate machinery. To the correspondent of The Associated Press was given the facts with reference to this industry to-day by French authorities, who arranged a trip to show him the strides made by the nation in reconstruction.

Within a year, government officials and manufacturers agree, production of textile will reach half of the pre-war total, and within two years, these men forecast, the 1914 output will be surpassed.

The wool industry is said to be recovering most rapidly, with cotton in second place. Linen weaving is reported to be slowest in getting back to normal because of the shortage of flax, formerly obtained from Russia.

In Lille and adjoining cities of Roubaix and Turcoing, where the textile manufactories are centered, it is estimated 30,000 men, women and children are now busied with combing, spinning and weaving, and approximately 10,000 are employed in the smaller mills of surrounding towns where progress is slower but is being pushed with equal vigor.

Statistics compiled by the government from necessarily accurate statements, upon which factories are paid reconstruction indemnities, show that in the Lille district on October 1 last there were 36,384 persons working in 162 textile plants, compared with 106,066 employed before the war in 265 factories. In all of the 491 textile mills of the liberated regions there were employed in August of this year only 21,027 of the 152,948 persons at work four years ago.

Reconstruction of the textile industry was declared by manufacturers a few months ago to be almost a hopeless task. At least, they said, it would be so slow that France would lose her world trade in textiles. Now, however, a brighter view is being taken, and government figures show the industry has reached two-fifths of normal production. Manufacturers themselves concede the output is at least one-third of that before the war. All agree that rehabilitation is proceeding more rapidly each month, as the looted machinery is being returned from Germany or new installations are coming from England and the United States.

This industrial recovery, which seemed unimposing at first, has been made through the combined efforts of the government and plant owners against difficulties that appear more formidable the closer they are examined.

Direct damage to the textile industry is estimated by the ministry of reconstruction at 20,000,000,000 francs ($4,000,000,000 nominally). In this section of France, the heart of the industry, mills for the most part were knocked to pieces and the rest were damaged. All of the electric machinery, belting, shafting and similar equipment were taken by the Germans, and seven-tenths of the spindles, looms and combers which possessed almost human dexterity were either shipped to Germany or pounded into utter uselessness.

Two out of every hundred machines were left intact, packed and tagged for shipment, but were abandoned by the Germans in their strategic retreat.

The labor problem is not at this time particularly embarrassing to textile manufacturers. The task of replacing the remarkably skilled workers, many of whom are among France's million and a half of dead war heroes, is said to be in the way of solution, because women are more keen than ever for such well paid work, since many of them are widows.

Foreign Trade Convention

The National Foreign Trade Council, which will hold its forthcoming annual convention in San Francisco on May 12 to 15, has invited special trade advisors from foreign countries. Many foreign merchants plan to take advantage of that opportunity to meet American business leaders. American firms having representatives in foreign fields are asking their foreign representatives to visit this country during the convention.

Some thirty foreign nations, representing Central and South America, Canada, Australasia and the Far East, will have trade advisors at this the seventh annual convention according to an announcement by James A. Farrell, chairman of the National Foreign Trade Council, an organization composed of seventy-five leading American merchants and manufacturers engaged in foreign trade. Trade advisors are expected from the following countries: Canada, Mexico, Panama, Salvador, Honduras, Costa Rica, Guatemala, Nicaragua, Dominican Republic, Colombia, Venezuela, Ecuador, Peru, Bolivia, Brazil, Paraguay, Uruguay, Argentina, Chile, Australia, New Zealand, Tasmania, Straits Settlements, Dutch East Indies, Indo-China, India, Siam, Siberia and the Philippines.

In commenting on the presence of the foreign trade advisors, O. K. Davis, secretary of the National Foreign Trade Council, announced that ten trade advisors were being allotted to every foreign nation, commercial representatives of which have been invited to the convention. These special advisors will be chosen by trade organizations in their respective countries.

"These foreign trade advisors," continued Mr. Davis, "will be thoroughly representative of the international commerce of their respective countries. They will be at San Francisco for the purpose of supplying first hand information in regard to the markets of their respective countries. They will not be official Government representatives, but commercial delegates in the true sense of the word.

"The seventh national foreign trade convention will be a gathering of representatives of all phases of the international commerce of the United States. Delegates will attend from all parts of the country, and the opportunity of acquiring foreign trade information will, this year, be an exceptional one, if only through the presence of trade advisors from the various foreign nations."

The American Government's Opinion

of

The Far Eastern Review

From Page 170 *of the United States Department of Commerce Special Agents Reports, No.* 172, *entitled,*

"Electrical Goods in China, Japan & Vladivostok"

"TO REACH THE ENGINEERS IN THE ORIENT, PROBABLY ONE OF THE MOST EFFECTIVE MEANS IS 'THE FAR EASTERN REVIEW,' A WIDELY CIRCULATED TECHNICAL JOURNAL LONG PUBLISHED IN SHANGHAI BY AMERICANS. THIS JOURNAL CONTAINS ENGINEERING MATTER THAT SHOULD BE OF GREAT VALUE TO AMERICAN ENGINEERS WHO ARE AT THE MANUFACTURER'S END OF FOREIGN TRADE IN THE FAR EAST."

Mr. Lamont Explains What the Consortium Does Not Intend to do in China

THE visit to China of Mr. Thomas Lamont, representing the American banks interested in the Consortium, has set at rest a number of rumors and surmises and theories of wiseacres. Opponents of the Consortium have found much of their argument knocked askew, many of their false assertions exposed, and the bulk of their innuendoes disposed of. Mr. Lamont came with a straightforward message and delivered it on several occasions. At the dinner given by the Chinese bankers at Peking he minced no words, and left no room for doubt as to what the Consortium did not intend to do. The corrective he administered was very necessary. The Chinese found to their surprise that he was not in their country frantically endeavoring to lend them money, that he was not athirst for political adventure, that he did not care a snap whether they made a loan or not—and that, in reality, he would prefer that they didn't. The Chinese have not had such straight out talk from a foreign financial representative before. Most other visitors of the kind have shirked telling them the truth, and have not wished to learn too much of it. They have had careers to make and expected to make them through signing up some kind of a loan agreement. Mr. Lamont has made his name in the financial world and will enhance it rather than damage it by adhering to a lofty course with the Chinese, and, if necessary, packing his bag and going home without affording any assistance at all till internal conditions have improved, till peace obtains in the land, and till there is a government in power bearing a mandate from the people of the country. His sentiments are contained in the following speech delivered to the Chinese bankers of Peking, on April 12, and they cannot be repeated too often:

On behalf of my colleagues and myself I thank you most heartily for this cordial welcome. I am delighted to be in Peking, this city of honorable and ancient civilization that antedates by so many centuries the foundation of the American Republic. I am glad to be able to secure all those vivid impressions of beauty and charm and allurement that crowd upon one making his first visit to this Chinese capital. Above all, I am happy to be brought into contact with the Chinese people, to feel these evidences of friendliness for America and to emphasize to you the sincere friendship of America towards China; a friendship that dates back for many years but that has never before, I assure you, been so strong as it is to-day.

Of course, I am expected to say something about the proposed new Consortium. I am glad of the opportunity of doing so, and especially pleased to be able to say something to an audience as intelligent and distinguished as this, because since my arrival in China I have found so many conceptions of the Consortium completely at variance with the facts, so many rumors absolutely false and so many statements completely unfounded.

No Scheme or Plan to Impose on the People

First, then in a word, let me try to correct some of these misstatements. The idea has seemed to prevail that the Consortium is eagerly seeking for an opportunity to come to China and do business. This is not the fact. We are desirous of proffering assistance to China if she desires to receive it, but we have no scheme or plan to impose upon the Chinese people. We all have enough work and enough troubles of our own at home without coming half-way around the globe to assume new difficulties. All of the countries represented in the Consortium are short of working capital. It would be a satisfaction to all of them to learn from me that China did not require our assistance and that we were therefore free to conserve our resources for pressing needs at home. Let me emphasize this point—unless you want us to come we don't want to come and we will not come.

Another misconception prevailing seems to be that I as representing the American Banking Group, am anxious immediately to work out some definite plan for a loan or what not, and that unless I do so, my mission will have failed. Nothing could be further from the truth. I am charged by the American Group to bring to China their cordial expressions of good will, to explain the aims of the American Group, and of the proposed Consortium, and to bring back to America a thorough-going report as to conditions here; but for me to complete any particular negotiations at this time is quiet unnecessary and, unless China desires me to do so, I certainly will not undertake such a task.

The Consortium Itself

Now a few words about the Consortium itself. Its organization is the fruit of a general understanding arrived at over a year ago among the four great Governments involved. The American Government had some months previously, proposed to Great Britain, to France and Japan the organization of banking groups for a new Consortium on a much broader basis than the old one. These proposals contemplated a free and full partnership on the part of the four Banking Groups involved, for the purpose of offering assistance to China in the development of her great public enterprises, such as transportation, possibly reform of currency, etc. Further, it was contemplated that each banking group should turn over to the Consortium such options or concessions as they held, upon which substantial progress had not been made. It was felt that by following such a course as this and by having the four groups work together, there would be avoided for the future the setting up of new spheres of influence that might threaten the integrity of China. It was felt, too, that a Consortium organized along these lines would help in preventing possible jealousies that might otherwise be engendered; would bring into greater sympathy all five Powers involved, including China, which would thus work together for the welfare of the Western as well as the Eastern nations. The American people have always taken as their golden text for China the phrase of the "Open Door" laid down a generation ago by John Hays, and it was with this idea in mind that the American Government proposed this plan in the hope that it would for the future serve to prevent new spheres of influence; would keep open all the doors to trade and to friendly intercourse.

The "Open Door" Policy

At Paris last May, the Consortium was tentatively organized along the lines that I have just indicated, its agreement being subject to the approval of the four Governments. America, Great Britain, and France, as you already know, gave their complete approval. Japan, however, qualified her approval by a desire to reserve from the scope of the Consortium certain parts of Manchuria and Mongolia. Such reservations contravened, in the minds of the other banking groups and of the other Governments, the policies involved in any free and full partnership, and also in the maintenance of the "Open Door." Therefore, we have recently been holding conferences in Japan to see whether the Japanese cared to accept the invitation of partnership from America, Great Britain and France, on the same terms as ourselves. The Japanese banking group has assured me that they unanimously desire to do this. It now remains for the Japanese Government formally to confirm this desire. If they fail to do so and if Japan remains outside the Consortium, I should think that Japan might prove to be the chief loser.

I must emphasize another point upon which there has been great misconception. The idea has seemed to prevail, that the Consortium intended to carry on, or extend its influence over a

vast number of different enterprises, in China, like banking, commerce, manufacturing, etc. Nothing could be further from the truth. As I have already stated, the Consortium plans to deal chiefly with those great basic enterprises the development and establishment of which will make in China a firmer foundation upon which private initiative in banking and commerce can safely build. One eminent Chinese gentleman has been quoted to me as saying that the Consortium intended to dominate Chinese banking, or at least take within its purview certain Chinese banks. This is utterly untrue. We have no such plans; it would be contrary to our purpose; it would be as repugnant to us as it undoubtedly would be to Chinese banking circles.

A Double Responsibility

The Consortium has, as I have said more than once, a double responsibility. Assuming that China desires it to render aid here, it has the responsibility to the Chinese people. We have to see to it that any loans made to China are for constructive, not for wasteful, purposes, and are used for developing the country. In order that both China and the Consortium shall be assured that such worthy objects are being attained, the organization of some proper system of control must be mutually worked out, so that you and we may be certain of the proper application of loan funds. To say that the provision of proper safeguards for any particular loan means the control of Chinese Government finance is absurd. This general idea touches upon the second great responsibility which we must carry, and that is to our own people at home. You bankers readily recognize that the banking groups in America, Great Britain, France and Japan have not of themselves sufficient funds to advance for these great enterprises in China, but must look in turn to that great body of investors, not to the well-to-do alone, but to the rank and file of prudent, thrifty, saving people throughout our countries, and to them the Consortium will have the moral responsibility of seeing to it that their investments in China are properly administered. To them, in due course, we must render an account of our stewardship.

Thus, in order to carry out effectively any plans for works in this great country, the Consortium must count confidently upon the co-operation of the Chinese people and of its banking community, which is growing so rapidly and which is so worthily represented here to-night. Unless we have your good will and trust we cannot take one single step forward. We hope, too, that in a material way China will not rely too much upon the Consortium, but will be able to mobilize her own great latent wealth for purposes of domestic development. The lighter the burden that is laid upon the Consortium, the fewer enterprises that we are required to take up, the better we shall be pleased.

The Consortium Ideal

Finally, let me say in behalf of the American Banking Group—and I know that in this respect I can speak too for the British and French Banking Groups—that we have a very high ideal of the future of China, an ideal just as high, I venture to believe, as that cherished by your own people. In the years to come we look to see a great United States of China just as we have forty-eight states in the American Union, each competent to handle its local matters, yet bound into an indissoluble union under the Federal Government, so we look forward to the time when your great provinces shall handle themselves in the same way under the Republic of China. We look forward to the time when great systems of transportation will render easy the carriage of commodities and goods from one part of the country to another and shall make possible that constant intercourse which is bound to bring understanding and sympathy among all your people. You will recall with me that within the last one hundred years the development of America has been brought about chiefly through the building of those immense arteries of commerce, those trans-continental railways that have developed our great graneries in the northwest and in the southwest, and have made almost as one the wide-parted shores of the Atlantic and the Pacific. In like manner we believe that China can never attain her full statute, her full stability, until similar development has taken place here. To the realization of this high ideal for China all the friends of China desire to work.

You will recall with me that the Consortium has not as yet been fully formed, that it cannot be fully formed and made effective without your own desires and without your co-operation; that it can never become an instrument of great assistance to you unless it can carry on its operations in a country reconciled, united, peaceful, a country where the astonishing industry of your great people can be allowed to develop under conditions of stability, can be carried on under constantly improving conditions of prosperity and contentment.

British Locomotive Building

Important Developments Foreshadowed

The world-wide shortage of locomotives and rolling stock which has resulted from five years of warfare is an obstacle of the first magnitude which must be surmounted before international transport and trade relations can be resumed on anything like normal conditions. One of the largest English engineering firms, whilst war was still proceeding, foresaw that an acute shortage of this kind was to be expected when peace came. The Directors of this firm methodically laid their plans, and those carefully prepared arrangements have now materialised so that at the present time the Armstrong, Whitworth Company are making a remarkable bid for the premier position amongst locomotive builders throughout the world. The Ammunition Works at Scotswood on Tyneside were allocated for the construction of locomotives. Immediately after the Armistice they commenced their reorganization and within the short space of a year the vast munition plant has been swept away, the new plant installed, and the first Armstrong, Whitworth locomotive—a powerful 0-8-0 type for the North-Eastern Railway—was completed and delivered from their Works.

To-day the Scotswood Locomotive Works are the largest and best equipped works of its kind in the British Empire. Their present output capacity is over 400 heavy main line engines per year.

Even under present conditions the Company themselves anticipate that by the summer of 1920 their output will have increased to not less than 45 locomotives per week. The following list which gives particulars of some of the most interesting and important contracts which Messrs. Armstrongs at the present time have on hand:—

Country.	Ordered by	Type.
Great Britain and Ireland ...	...North Eastern Railway Co.	0-8-0 with six wheel tender.
,, ...	...Midland and Gt. Western Railway of Ireland ...	...0-6-0 with six wheel tender.
,, ...	...Caledonian Railway ...	...4-4-0 with six wheel tender.
,, ...	...Gt. Southern and Western Railway (Ireland) ...	...4-6-0 with six wheel tender.
Java	...Dutch Colonial Government Railway	...4-6-4
Brazil	...Leopoldina Railway ...	...4-6-0 with six wheel tender.
Trinidad ...	...Trinidad Railway	...4-6-0 with six wheel tender.
Nigeria	...Nigerian Railway ...	...Aro class 4-8-0 with 8 wheel tender.
India	...Indian State North Western Railway	...0-6-0 with six wheel tender.
,, ...	...Bombay, Baroda and Central India Railway ..	...2-8-0 with six wheel tender.
,, ...	...Madras and Southern Mahratta Railway ...	...2-8-0 with six wheel tender.
Argentina ...	...Buenos Aires Western Railway	...2-6-2
Belgium ..	...Belgian State Railways	...2-8-0 with six wheel tender.

As Philippine Trade Regains its Equilibrium

By Angel Cuesta Guerrero, Chief Clerk of the Bureau of Customs

THE aftermath of the great war has shaken the foreign trade markets of America to their very foundations, and the Philippines, as one of the chief sources of supply for these markets, has suffered no small share of the ensuing losses.

According to the official custom house figures, the balance of trade for the calendar year 1919 was registered against the Islands to the amount of Pesos 11,042,552, a decline of about Pesos 48,000,000 since 1918.

Transporting Tobacco Leaves from the Field.

This slump was in some degree the result of an attempt to corner the hemp market on the part of a few persons, who did not sufficiently weigh the fact that a product which has carried a great demand during the recent war, owing to large government wartime orders, would naturally slump when hostilities were suspended.

Hemp production in the year 1919 was considerably impeded by severe storms encountered in the hemp growing belt, however, and, without any further attempt to place the blame, we will pass along to the next item of export, after furnishing food for conjecture in the form of the official hemp figures, which are, for 1918: (total valuation) Pesos 116,383,100; and for 1919: Pesos 53,703,052, a decrease of more than 50 per cent.

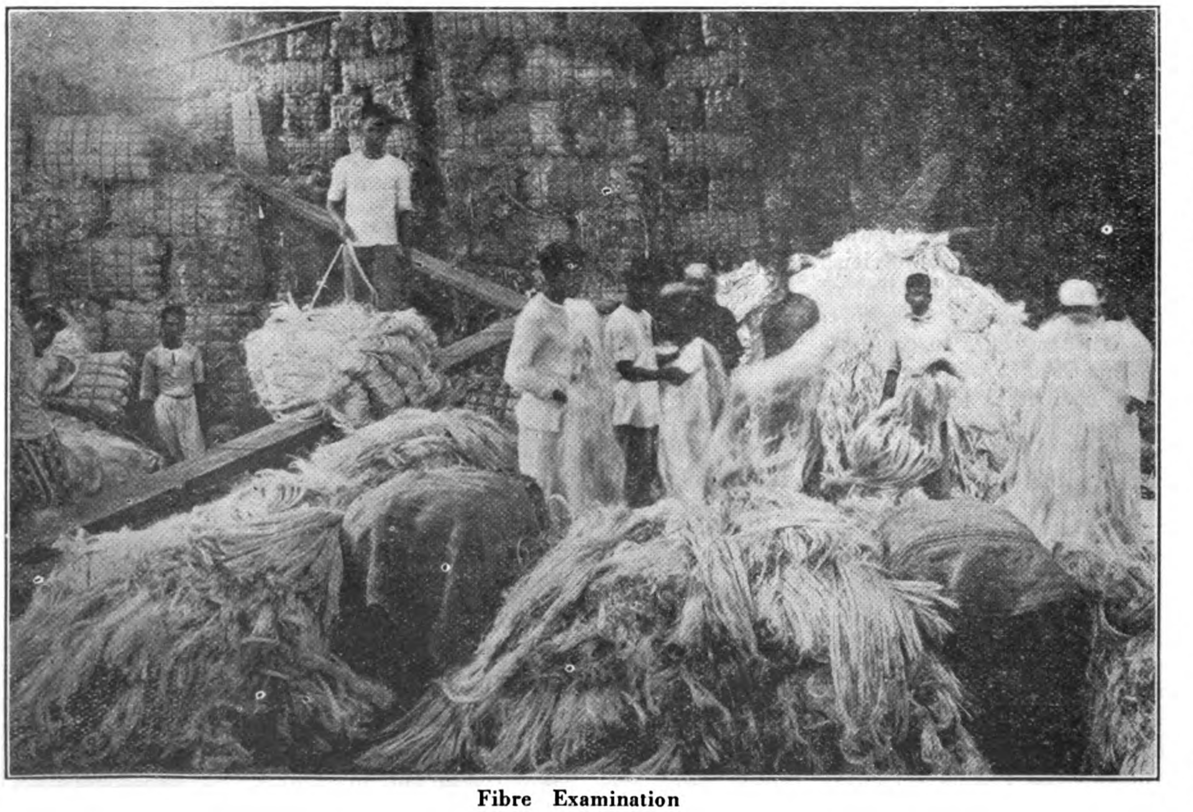
Coconut oil, the second largest item of Philippine exportation, gained about Pesos 10,000,000 in 1919, the comparative quotations of the last two years being, 1918: Pesos 63,328,317; 1919: Pesos 73,719,504. Practically all of the Philippine oils are exported to the United States.

The exportation of tobacco is a large factor in Philippine commerce and the improvement in the production and marketing of this product has increased in 1919 to a great extent, notwithstanding the unfavorable condition of ultimate markets. Following is a detailed table showing the comparative tobacco figures for the last two years:—

Tobacco.	1919	1918
Cigars	P.18,157,707	P.14,252,637
Cigarettes	P. 391,729	P. 231,941
Leaf Tobacco	P.12,459,210	P. 9,954,955
All other Tobacco ...	P. 381,438	P. 2,730,293
Total Tobacco	P.31,390,084	P.27,169,826

One of the most apparent indications of the industrial growth that is taking place in the Philippine Islands is contained in the figures covering the importation of iron and steel, and the manufactures of iron and steel. The value of the importation of these products in 1918 is Pesos 24,507,970, nearly fifty per cent. less than the 1919 figure, which is Pesos 44,735,174.

The Honolulu Iron Works Company, one of the largest sugar machinery companies in the world, has recently purchased a large tract of land in Manila and has announced the intention of erecting a machine and machine tool factory on the site; this will probably double the iron and steel importations for the coming year.



Fibre Examination

The sugar exports fell off considerably during the year 1919, this product also, as well as hemp, falling victim to shortened prices in the American market. Many of the large sugar exporters held the raw product for a more favorable market, and as a result, the trade figures register a slump where there should have been an improvement. The custom house registration figures are as follow:—

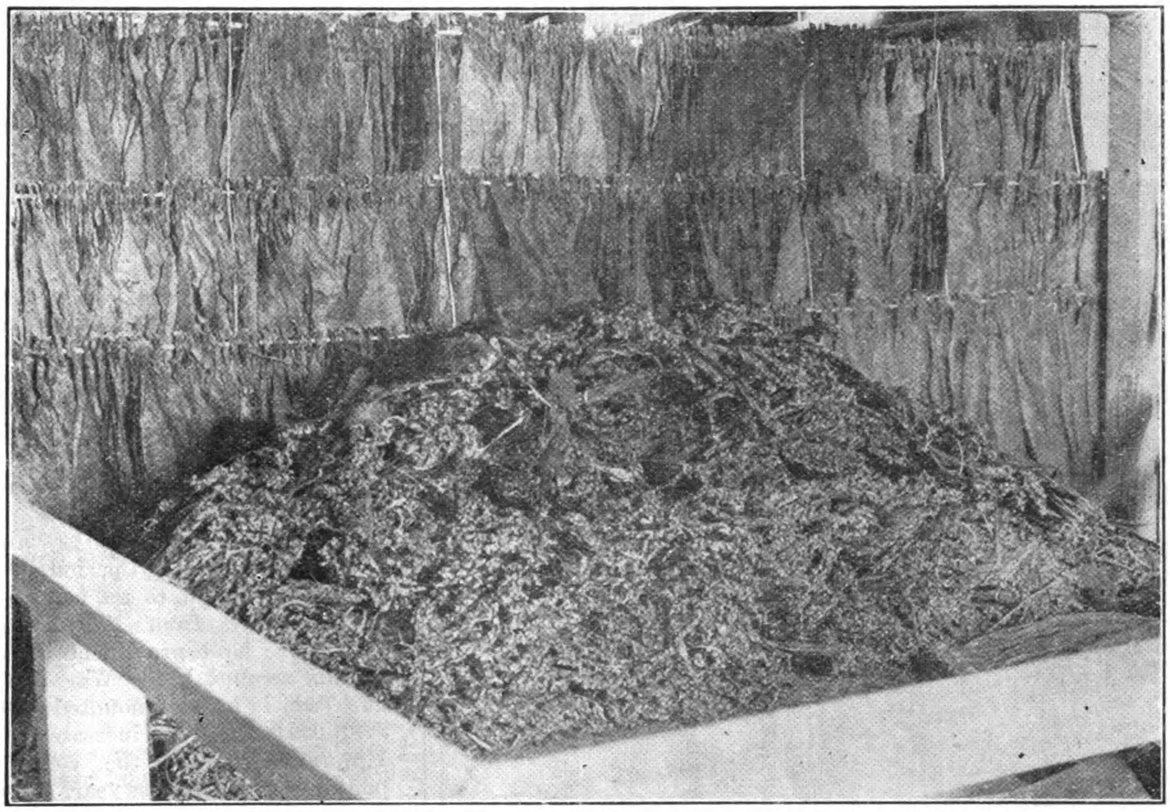
Sugar.	1919
Centrifugal ...	P. 8,218,213
Raw	P.22,182,555
Refined	P. 14,933
Total Sugar ...	P.30,415,701

Sugar.	1918
Centrifugal ...	P.11,578,567
Raw	P.19,850,213
Refined	——
Total Sugar ...	P.31,608,780

Rice, a food product that is consumed more universally in the Islands than any other,

registers a 1919 import valuation of Pesos 8,817,362, as against Pesos 16,433,585 for 1918. The decrease in the importation of this food testifies to the development of the agricultural resources of the Philippines, also the high prices in other countries cut the imports here. It is stated by the Philippino Bureau of Agriculture that within the next five years the rice plantations of the Islands will have developed to the extent of placing rice among the principal items of export as well as feeding the entire Archipelago.

Copra was exported in the year 1919 to the valuation of Pesos 8,839,376 and has also been imported to the amount of Pesos 5,425,560. These figures appear rather paradoxical, but the explanation lies in the fact that the copra mills of the Islands cannot purchase enough of the product locally to keep their mills in operation more than half the year, as the dealers prefer to export the copra to a better market, when the prices elsewhere are extra high. Owing to this condition, the mill operators are compelled to import or close up the mills. If the oil mills here were able to get the total copra production of the Islands, stop exportation of copra entirely, there still wouldn't be enough to keep all mills going regularly.



Native Process of Drying Tobacco.

Sugar Cane in the Philippines.

It has been proposed in the Philippine legislature to allow the importation of peanuts free from duty, in order to work the copra mills in the manufacture of peanut oil during the copra shortage, but no action has been taken by the government in the matter to date.

The importation of cotton cloths has decreased from Pesos 40,933,913 in 1918 to Pesos 23,825,903 in 1919, the merchants being hesitant about buying because they feared that prices might fall before they could dispose of the goods. The hesitancy is no longer perceptible.

Gold ore has not been exported in large quantities principally because the local jewelry firms buy much of the product at the mines and use it in the local market. The following table is a supplemental statement of the gold ore, bullion and Philippine silver coin exported in the calendar year 1919 as compared with the calendar year 1918:—

1919

Articles	Country of Destination	Quantity (ounces)	Value
Gold ore ...	U.S.	—	P. 100,000
Gold bullion	U.S.	66,872	P. 1,732,520
Gold bullion	China	3,911	P. 110,633
Silver ore ...	U.S.	—	—
Silver coin .	China	—	—

1918

Articles	Country of Destination	Quantity (ounces)	Value
Gold ore ...	U.S.	—	—
Gold bullion	U.S.	65,918	P. 1,873,938
Gold bullion	China	—	—
Silver ore ...	U.S.	—	P. 28,000
Silver coin .	China	—	P. 7,500,000

The Philippine embroidery industry furnishes a living for thousands of Filipino women and girls, and may well be ranked among the arts of the Island group; some of the intricate designs worked out by the native experts cannot be equaled in any part of the world. In 1918, the Philippines exported Pesos 4,319,501 in this luxury, as compared with Pesos 6,913,004 in 1919, and the industry is only in its infancy.

The figures given in this article show, in a small way, the industrial condition of the Philippines and explain the

reason for the 1919 balance of trade against the Islands; they also testify to the development of the agricultural resources and to the growth and improvement witnessed in many and various avenues of commerce, regardless of the trade report.

The total value of imports, exports and total trade, by ports of entry are contained in the following tables:—

1919.

Ports.	Imports.	Exports.	Total Trade.
Manila	P.214,933,135	P.179,704,986	P.394,638,161
Iloilo	10,284,982	20,353,136	30,638,118
Cebu	9,409,848	24,611,112	34,020,960
Jolo	836,340	680,177	1,516,517
Zamboanga	1,791,958	870,780	2,662,938
Balabac	21,801	15,461	37,262
Total Trade ...	P.237,278,104	P.226,235,652	P.463,513,756

1918.

Ports.	Imports.	Exports.	Total Trade.
Manila	P.178,939,906	P.228,818,256	P.407,758,162
Iloilo	4,349,937	16,019,055	20,368,992
Cebu	11,484,577	24,718,359	36,202,936
Jolo	1,057,605	340,512	1,398,117
Zamboanga	1,354,051	483,541	1,837,592
Balabac	12,347	9,241	21,588
Total Trade ...	P.197,198,423	P.270,388,964	P.467,587,387

The markets of the world have now regained some vestige of their pre-war stability, and are clamoring for Philippine products: in the year 1920 thousands of hectares of land will be claimed for agriculture; eight large sugar centrals are under construction; the harbor is being widened and deepened; plans for a free port are being considered by the legislature; the Islands are undoubtedly opening an era of progressive prosperity, and, all these things considered, the statement of a prominent Filipino customs official to the effect that "the Philippines will shatter all previous individual and total import and export figures in the calendar year of 1920" may easily be credited.

State Revenues of Japan

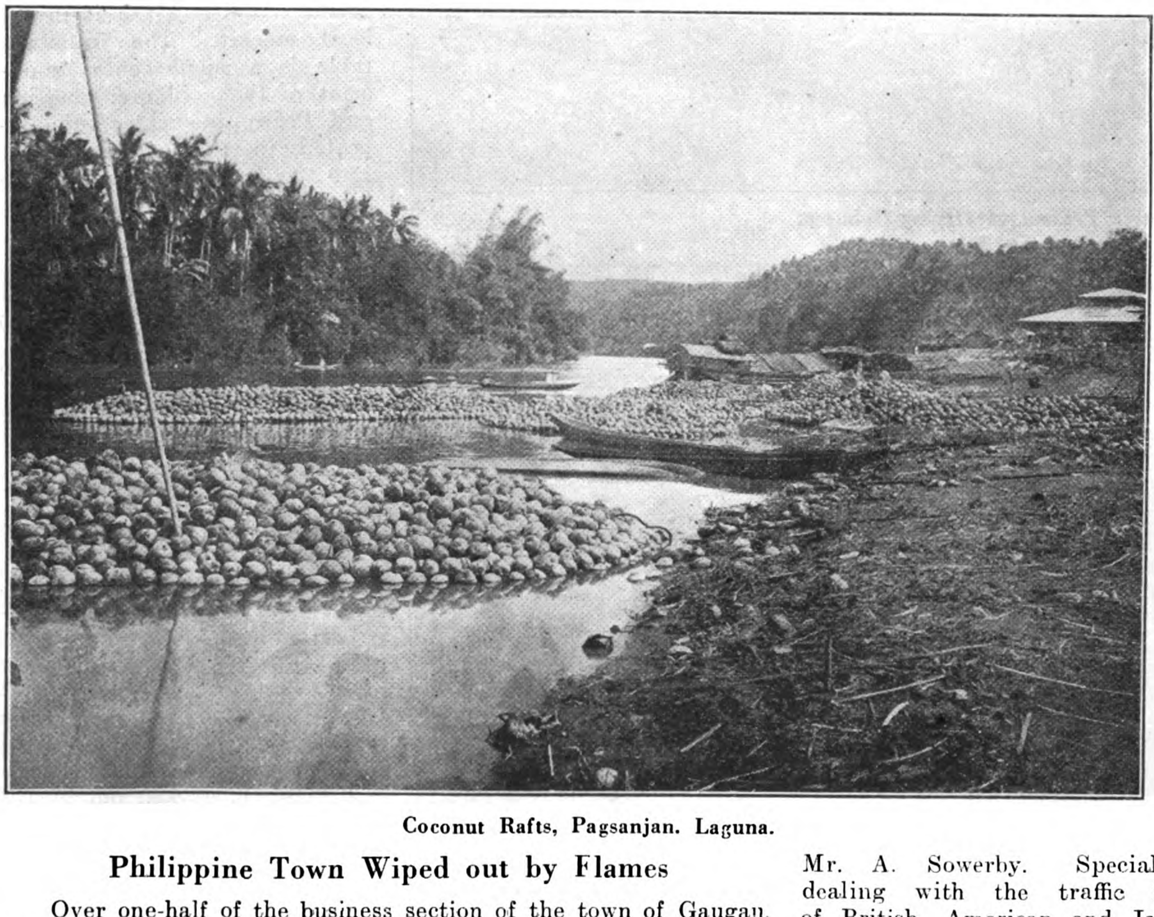
Japan's State revenue for the financial year 1919-1920 reached Y.1,288,721,836.21 at the end of February against Y.1,028,884,947.557 for the corresponding period of last year, the gain only amounting to Y.259,836,888.653.

Of this total, Y.651,826,785.98 was ordinary revenue, which showed a gain of Y.114,421,828.672, the bulk of it coming from the taxes. The total receipt of taxes was Y.437,378,479.526, being an increase of Y.100,284,336.294 as compared with the corresponding period of the last financial year. The biggest item under this head is the Income Tax. The total receipts of the tax amounted to Y.111,605,156.20, an increase of Y.45,231,787.085. The Land registers a decrease of Y.73,779.505 on the other hand, the total having come up to Y.44,605,343.685.

Among other indirect taxes the Consumption Tax on Sugar scores a strikingly big increase apparently on account of the heavy speculative importation of sugar from Java. The total at the end of February was Y.39,007,177.58, an increase of Y.10,977,779.855 as compared with the corresponding period of last year. It is also to be noted that the taxes paid by Exchanges were doubled. The present receipt is Y.14,719,554, an increase of Y.7,072,410 compared with the corresponding period of last year. This is evidently the result of the gambling booms started in Japan recently. Import duties amount to Y.64,470,882.18, an increase of Y.6,603,141.42 over the corresponding period of last year.

The income from State properties and enterprises shows a very poor increase evidently because of the Monopoly Bureau's profit being not yet transferred to the general revenue accounts. The receipts from the Postal, Telephonic and Telegraphic services amounted to Y.103,049,454, an increase of Y.11,261,805.888.

Extraordinary revenue amounted to Y.636,895,050.23 an increase of Y.145,415,059.881 over the corresponding period of last year. The greater part of this increase is due to the balance brought over from last fiscal year. The most prominent item in this account is the War Profit Tax, which amounted to Y.101,938,080.47, an increase of Y.57,544,382.30 over the corresponding period of last year. The receipt of premium on marine insurance contracts was only Y.714,060,361, being a decrease of Y.27,597,533.



Coconut Rafts, Pagsanjan. Laguna.

Philippine Town Wiped out by Flames

Over one-half of the business section of the town of Gaugau province of Pampanga, was razed to the ground early in March by a conflagration which burned 500 houses, the loss being estimated at more than half-a-million pesos. A strong gale and the utter absence of fire-fighting apparatus, which is to be found in almost every provincial town in the Philippines, made the blaze impossible to check, and the remainder of the town was saved merely because of its location to windward of the flames. This is the largest fire recorded since the great Carnival disaster in Manila.

New Anti-Opium Campaign

The "Peking and Tientsin Times" says a Reuter dispatch of April 5, to-day publishes an eight-page anti-opium and anti-morphia supplement. The supplement contains a message from President Hsu Shih-chang to the Anti-Opium Association and special articles by Li Yuan-hung, Sir John Jordan, Mr. S. Jarlin, Sir Francis Aglen, Bishop Norris, M. Picard-Destelan. Dr. Wu Lien-teh, Mr. A. F. Blanco, and Mr. A. Sowerby. Special features are selected articles dealing with the traffic in narcotic drugs, photographs of British, American and Japanese consigned drugs seized in China, together with photos of victims of the drugs. Copies of the supplement are being mailed to the members of the British and American Legislatures and to the leading papers in America, Great Britain, China, India, Australia, Canada and other countries. The world-wide distribution of this supplement gives the best illustration, yet offered, of the world-active measures being undertaken by the anti-drug societies of China and also of the close and ready co-operation of the leading officials in China as well as of leading foreigners and of the press.

Shanghai's Electricity Department

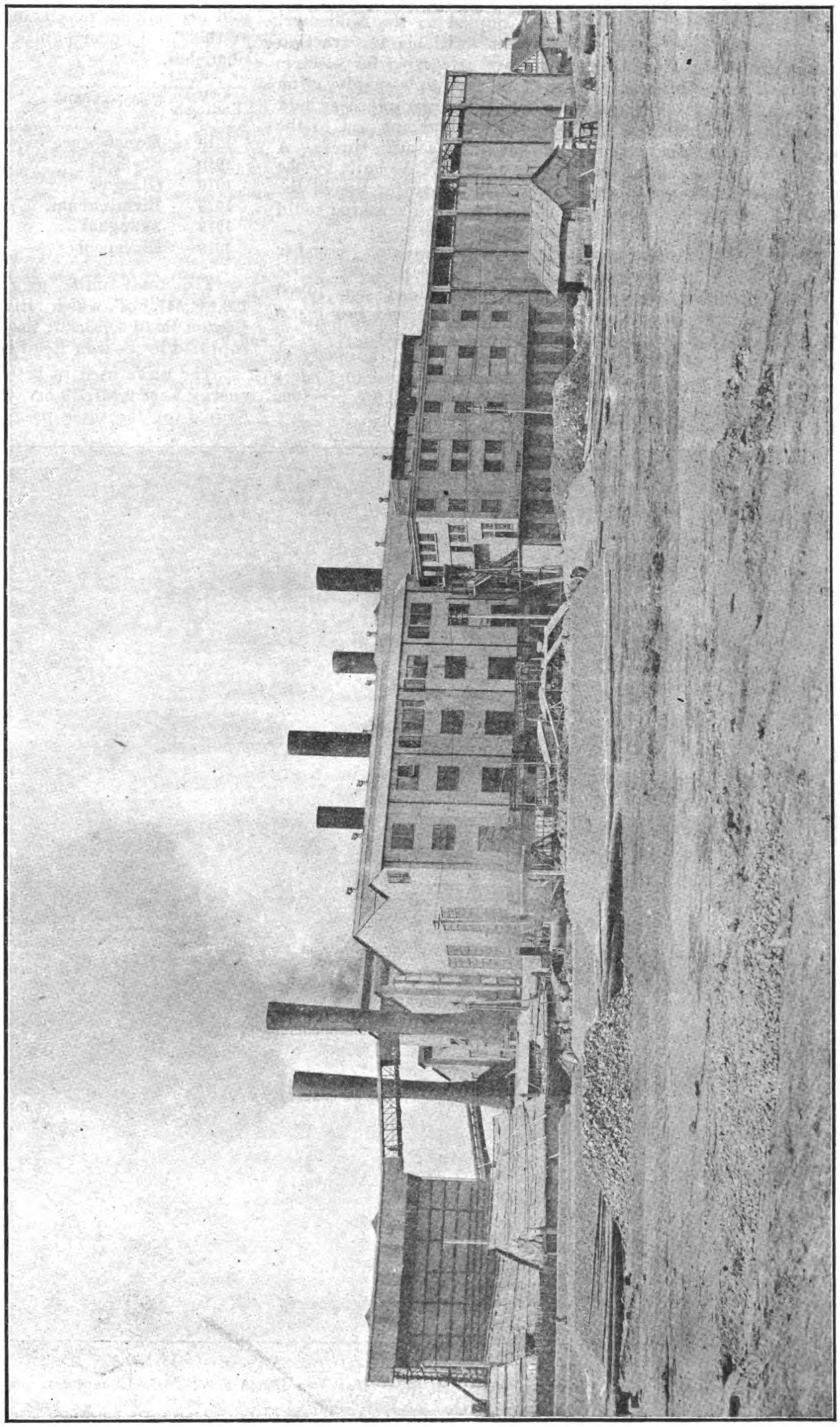
(Annual Report of Engineer-in-Chief and Manager, Mr. T. H. U. Aldridge)

THE year 1919 may be regarded as a satisfactory one for the Electricity Department; its activities were extended on a progressive scale both as regards new construction work and sales of electricity. The Riverside Power Station was still operating without a sufficiency of reserve plant, but the situation was made somewhat easier by the commissioning of the 5,000 K.W. Fraser and Chalmers-Vickers turbo-generator in January, although the two A.E.G. 2,000 K.W. generators were not repaired and put into use until the autumn. The reconstruction of these two generators by the Mitsu Bishi Works at Nagasaki has been quite successful, and as far as can be judged the work has been thoroughly well done. The electrical part of these two machines is now regarded as being superior to what it was originally. Both the 5,000 K.W. A.E.G. generators again broke down badly during the year at a most unfortunate time when another 5,000 K.W. turbo-generator was out of service for overhaul. As a consequence several large power users had to be put on restricted supply for a week or so, with serious inconvenience to them, and loss of prestige and revenue to the department. It is but fair to state that the power users affected met the department in a fair spirit of compromise, realizing the difficulties under which it was laboring.

Owing to the plant shortage, the cost of generation did not fall as low as was anticipated, for the reason that no opportunity was afforded to overhaul the G.E.C. 10,000 K.W. turbine and condensing plant, which prevented the attainment of high vacuum, which is such an important factor in the economical operation of steam turbines. These unsatisfactory operating conditions are reflected in the cost per unit generated not falling as low as it otherwise would. Another contributory cause was the necessity of continuously running the smaller and less efficient turbines whilst the two 5,000 K.W. machines were laid off for repairs; and furthermore, the Fearon Road plant had to be used more than was contemplated at the beginning of the year.

Towards the latter part of the year the erection of the new 10,000 K.W. Parson's turbine, and the first of the two 18,000 K.W. General Electric turbines, was commenced. At the close of the year the erection of the condensers of both units was practically completed.

The 10,000 K.W. generator was transferred from the 6,600 volt



RIVERSIDE POWER STATION
View from East. Separate 22,000 Volt Switch and Transformer House in Centre

switchgear to its bank of step up transformers, and for the first time two trunk cables from Riverside to Fearon Road were operated at a pressure of 22,000 volts. These trunks had previously been in service on the 6,600 volt system. At the Fearon Road station a corresponding bank of transformers was put into service for stepping down the pressure from 22,000 to 6,300 volts for re-distribution on the 6,300 volt feeders radiating from Fearon Road.

A 3,500 K.V.A. Westinghouse synchronous condenser was put into service at Fearon Road for power factor correction. By means of a 600 K.W. dynamo direct coupled to the condenser, additional direct current at 550 volts is available for traction purposes, and also for the direct current service for electric elevators. This machine is the first of its type to be employed on the system, and its success as a power factor improver and additionally as a means of providing direct current, led to the ordering of a duplicate machine from the same manufacturers. A larger synchronous condenser rated at 6,500 K.V.A. built by the General Electric Company was delivered last year for use in the 25,000 K.W. sub-station at Tonquin Road, but this machine could not be used as the sub-station was not completed.

The installed plant capacity of the two stations at December 31 was 38,600 K.W.: Riverside, 33,000; Fearon Road, 5,600.

To the Riverside Power Station is being added: one 10,000 K.W. Parsons and Co. turbo-generator (erecting) and two 18,000 K. W. General Electric Co. turbo-generators (erecting).

The highest maximum load which occurred simultaneously at the two stations was 28,365 K.W. The load delivered to feeders was 27,553 K.W. an increase of 29.83 per cent. over the previous year.

Load Factor

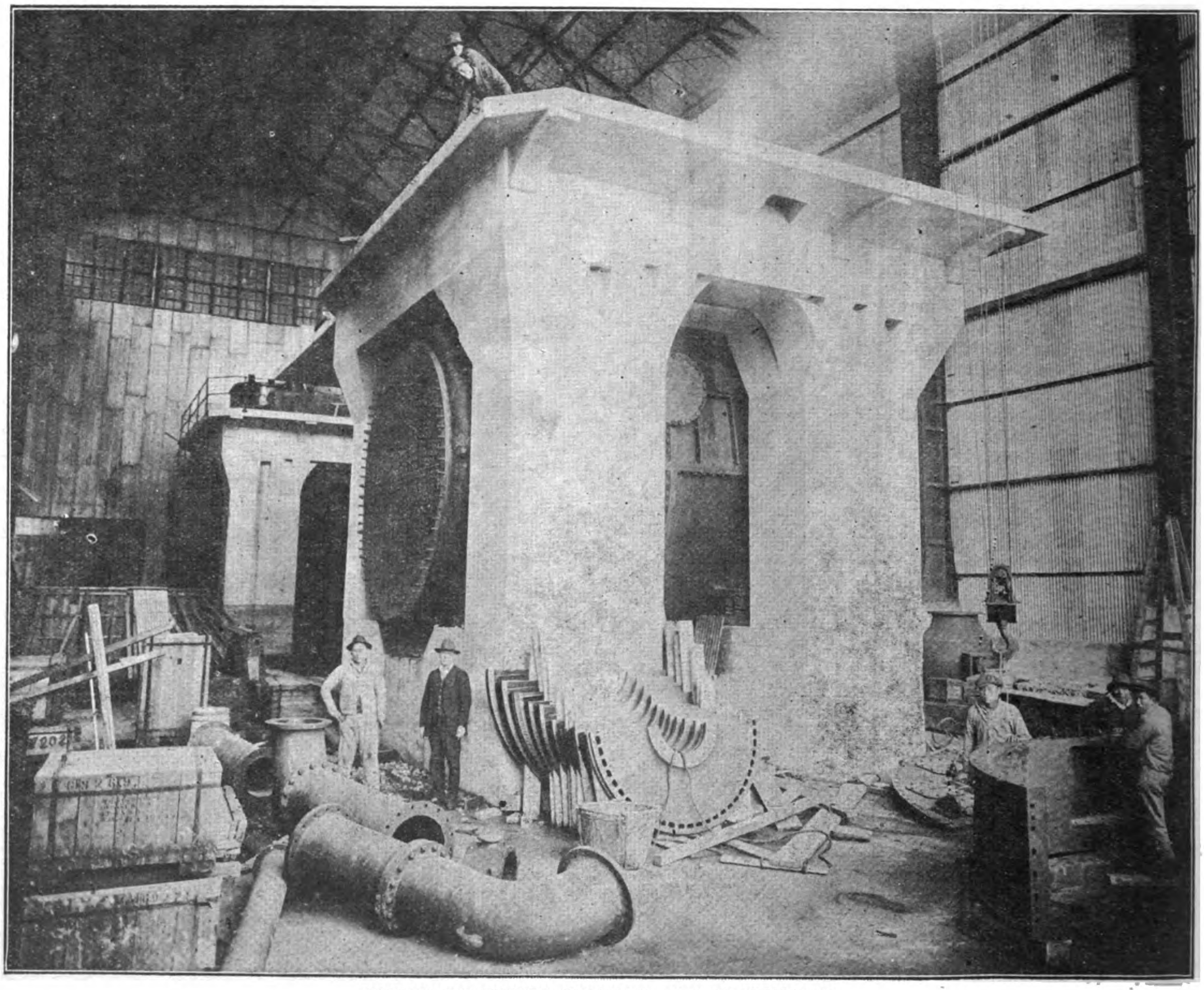
The load factor has dropped slightly, from 44.38 per cent. to 42.39 per cent. The drop is due to a few bulk supply consumers coming on to the system during the last quarter of the year.

Notwithstanding the slight drop, the 42.39 per cent. load factor may be considered extremely good, and it compares more than favorably with the five largest municipally-owned electricity undertakings in Great Britain. The table below shows the units sold per annum, maximum demand in kilowatts, and load factor of these five undertakings, and also similar data relating to Shanghai.

Year Ending	Undertaking	Units Sold per annum	Maximum Demand in K.W.	Load Factor. %
1919	Manchester	184,675,190	65,050	32.41
1919	Sheffield	161,839,041	59,546	31.03
1919	Glasgow	144,930,164	59,168	27.96
1919	Birmingham	140,938,720	53,185	30.25
1919	**Shanghai**	**102,338,137**	**27,553**	**42.39**
1919	Liverpool	72,623,368	30,000	27.63

The total units generated at both stations amounted to 128,844,547, of which Riverside accounted for 123,058,950 and Fearon Road 5,785,597, the percentage of the total units generated supplied by Fearon Road being 4.49.

The units used in both stations directly in the generation of energy were 9,861,773 or 7.65 per cent. of the total generated. The figures for the three previous years were 8.04 per cent., 6.55 per



RIVERSIDE POWER STATION—1919 EXTENSIONS
View Showing Foundation Blocks for Two 18,000 K.W. Turbo-Generators. 36,000 Square Feet Worthington Condenser in Position

cent. and 6.81 per cent. respectively. 284,666 units were used for miscellaneous purposes such as Fearon Road station lighting, stores, godowns, offices and showrooms, also for office and showroom heating, and energy used by the meter testing department.

Units Sold

The total units sold amounted to 102,338,137, an increase of 18.62 per cent. over 1918.

	1914	1915	1916	1917	1918	1919	Increase
Private Lighting	12,325,247	14,073,166	14,285,888	15,206,019	14,444,261	16,378,793	1,934,532
Public Lighting...	1,055,272	1,005,259	1,058,772	1,128,896	1,141,973	1,192,650	50,677
Heating and Cooking ...	395,675	679,704	899,585	1,129,754	899,852	952,814	52,962
Power	15,230,639	30,633,455	42,042,853	57,182,340	66,024,895	79,622,548	13,597,653
Traction	3,626,838	3,395,813	3,873,699	3,843,433	3,764,678	4,191,332	426,654
	32,633,671	49,787,397	62,160,796	78,490,442	86,275,659	102,338,137	16,062,478

The nett sales of electricity for all purposes has increased from 86,275,659 units in 1918 to 102,338,137 or 18.6 per cent. Lighting shows a very satisfactory recovery, for whereas in 1918 there was a reduction on the previous year of 761,758 units, there was a substantial increase of 1,934,532 last year above the 1918 sales.

The power units sold have risen from 66,024,895 in 1918 to 79,622,548 last year, an increase of 13,597,653 or 20.9 per cent.

Traction supply increased from 3,764,678 to 4,191,332 units, an increase of 426,654 units or 11.3 per cent.

There was a net increase, after allowing for disconnections, of 2,870 new service connections made to the mains during the year, bringing the total services to 27,903 at the end of December.

The equivalent of 103,781 additional 30-watt lamps were added which brings the total up to 844,391. These figures include lamps, radiators, cookers and small domestic electrical appliances. They do not, however, include either motors or street lamps. The street lamp additions and new motors connected will be found respectively in the distribution and power sections of this report.

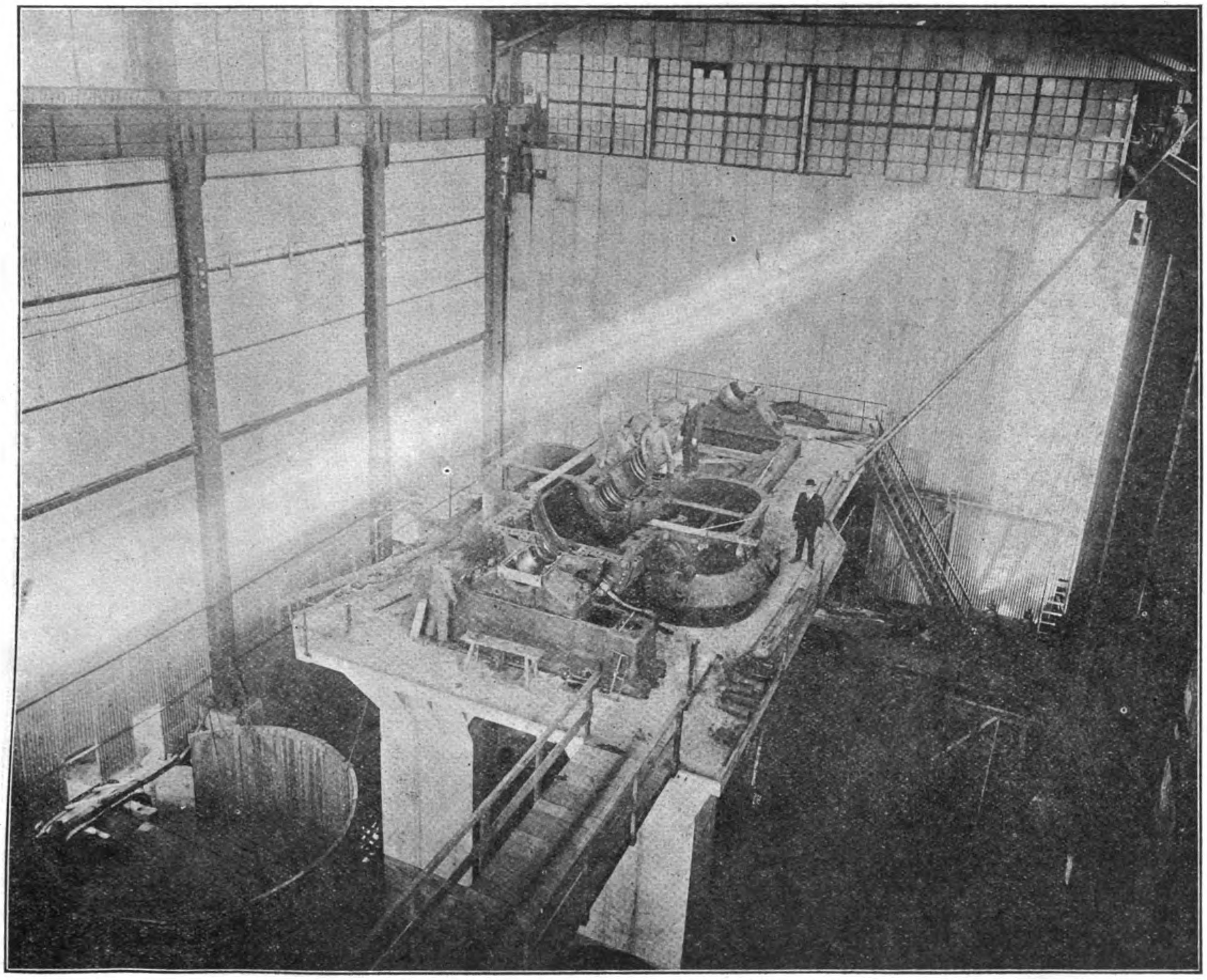
During the year 108.75 miles of overhead cable were erected for extending and enlarging the overhead mains. 16.56 miles of extra high tension underground mains, 1.56 miles of low tension, and .54 miles of pilot cable were laid.

Underground Mains

The 22,000 volt cables between Fearon Road station and Tonquin Road sub-station were completely laid and jointed between the months of July and December (inclusive), thus giving a very urgently needed relief to the older cables in this district. This job alone involved the handling of five hundred and fifteen tons of cable.

Three of the original 22,000 volt trunks between Riverside and Fearon Road which previous to this had been worked at 6,600 volts were changed over to 22,000 volts working pressure, the necessary permanent end boxes, etc., being erected at the same time. A start has been made on the laying of two more 22,000 volt cables between Fearon Road and Tonquin Road but only about one mile of this cable was delivered to date.

During the early part of the year a large amount of work was done at Riverside power station in connecting up the 1916 auxiliary switch-board to the various pump, fan, stoker and conveyor motors, all of which work was done with three core, lead covered, and armored cables.



RIVERSIDE POWER STATION—1919 EXTENSIONS
View Showing G.E.C. 18,000 K.W. Turbo-Generator in Course of Erection

In connection with the erection of the two Willans machines in the extension behind the boiler house, eight cables were laid and jointed for the purpose of connecting them to the old board.

The permanent 6,600 volt machine cables were also put in for generators Nos. 5 and 6.

Summary of Underground and Overhead Cable Work

E.H.T. 22,000 volt underground mains extended		12.68	miles.
,, 6,600 ,, ,, ,, ,,		3.88	,,
,, Overhead Feeders extended		15.17	,,
,, ,, ,, enlarged		1.74	,,
H.T. ,, ,, extended		1.20	,,
,, ,, ,, enlarged		0.86	,,
L.T. Underground mains extended		1.56	,,
,, ,, Pilot cable extended		0.54	,,
,, Overhead mains extended		42.67	,,
,, ,, ,, enlarged		28.30	,,
,, Mains in alleyways extended		5.24	,,
P.L. Mains extended		8.07	,,
,, ,, enlarged		1.53	,,
Private Road Lighting Mains extended		3.60	,,
,, ,, ,, ,, enlarged		0.37	,,
Poles in Roads—New	631		
,, ,, Renewed	1,023		
,, in Alleyways—New	254		
,, ,, Renewed	12		

Public Lighting

It is satisfactory to note that not only were more lamps connected during the past year, than in 1918, but also the candle-power of the lamps connected shows, lamp for lamp, a considerable increase over the previous year.

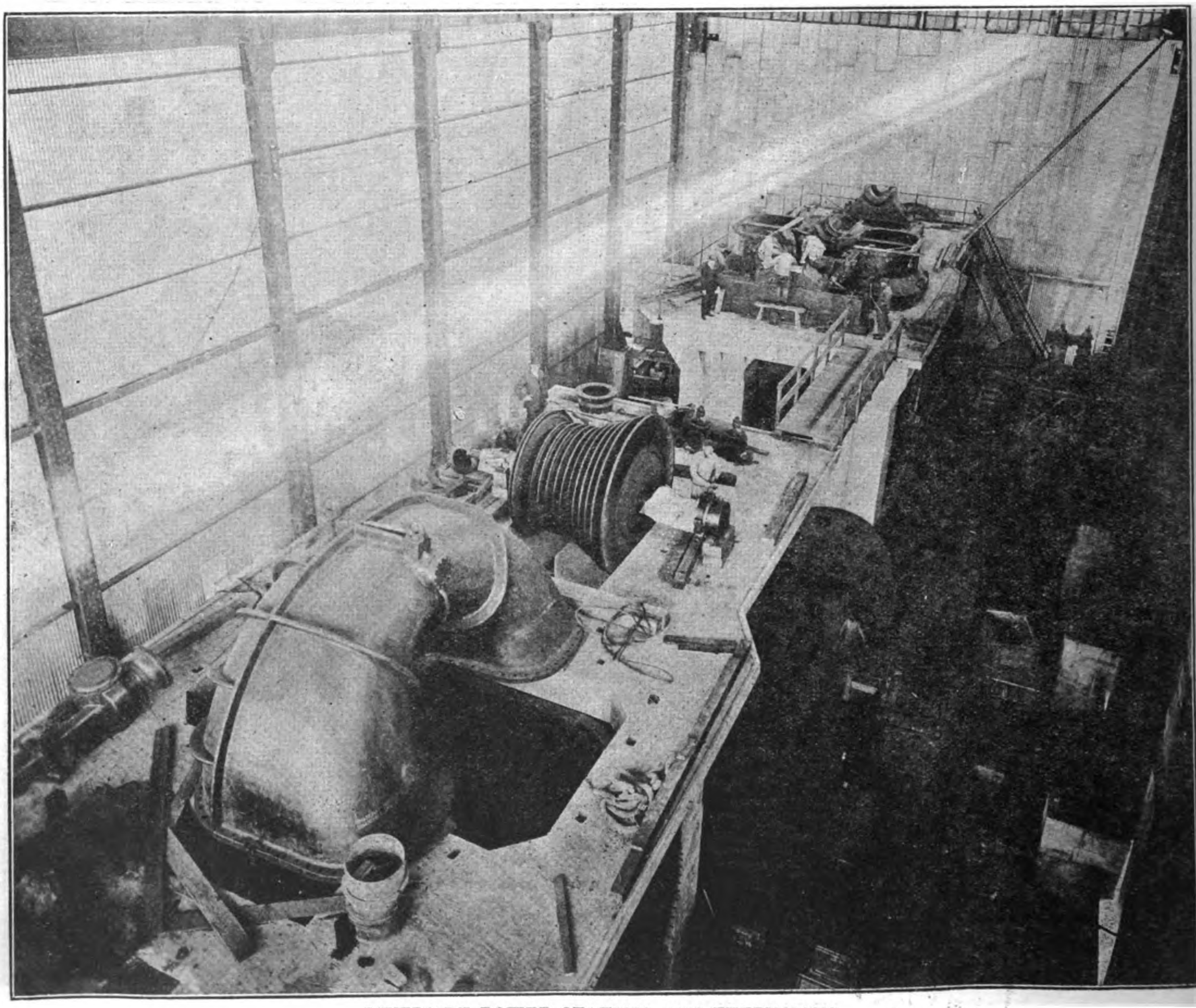
The present lighting of the more important roads generally leaves much to be desired. In this connection, Nanking Road is particularly noticeable for its inadequate lighting. It is anticipated that within the next two months this road will have been re-lit with an intensity of illumination not inferior to that obtaining in busy thoroughfares of other large cities.

During the year, in addition to the usual additions to the public lighting, the following roads were re-lit with lamps of increased candle-power:—Great Western Road, between Seymour and Chungking Roads; Bubbling Well Road, between Siccawei Road and Ferry Road; Yangtszepoo Road, from Lay Road to the Tramway Company's Terminus. At the same time a re-arrangement of certain circuits was made with the result that the above roads are now supplied by two, and in some cases three, separate circuits.

In the Northern District a general re-arrangement of many of the existing circuits was made, and at the same time a new circuit (T), was formed out of parts of the old circuits. This new circuit was put into commission early in the year.

As a result of these alterations the principal roads of the Northern District (Woosung, Range, Haining, North Chekiang, and North Soochow Roads) are at present supplied by at least two separate circuits, the lamps being arranged alternately on each circuit.

Transformers.—During the year the five double-circuit transformers were replaced by ten single-circuit transformers and series regulators. An improvement in the life of the lamps connected



RIVERSIDE POWER STATION—1919 EXTENSIONS

View Showing G.E.C. 18,000 K.W. Turbo-Generator in Course of Erection, also Foundation Block of Second 18,000 K.W. set.

to these ten transformers, due to the closer regulation of the single circuit series regulators, is already noticeable.

Street lamps connected at the end of the year numbered 1,925. The fines incurred during the year for unlighted lamps amounted to Tls. 1,076, which is a decrease of 53 per cent. on the fines incurred during the previous year.

The increase in lamps connected during the year cannot be considered satisfactory in view of the amount of building and the development of property which has been, and is now, taking place. With a few exceptions, property owners are slow to realize the advantages of well lit private roads and alleyways. It is apparently not realized that outside lighting can be installed and maintained by the department at inclusive rates the same as those charged for the lighting of the public roads.

An objection has been made to having electric lamps in private roads because of the glare. This is a matter which can be easily adjusted by carefully choosing suitable positions for the lamps with due regard to the windows of adjacent houses. Also, it is a simple matter to fit a side-shade to a lamp without cutting off an undue amount of light.

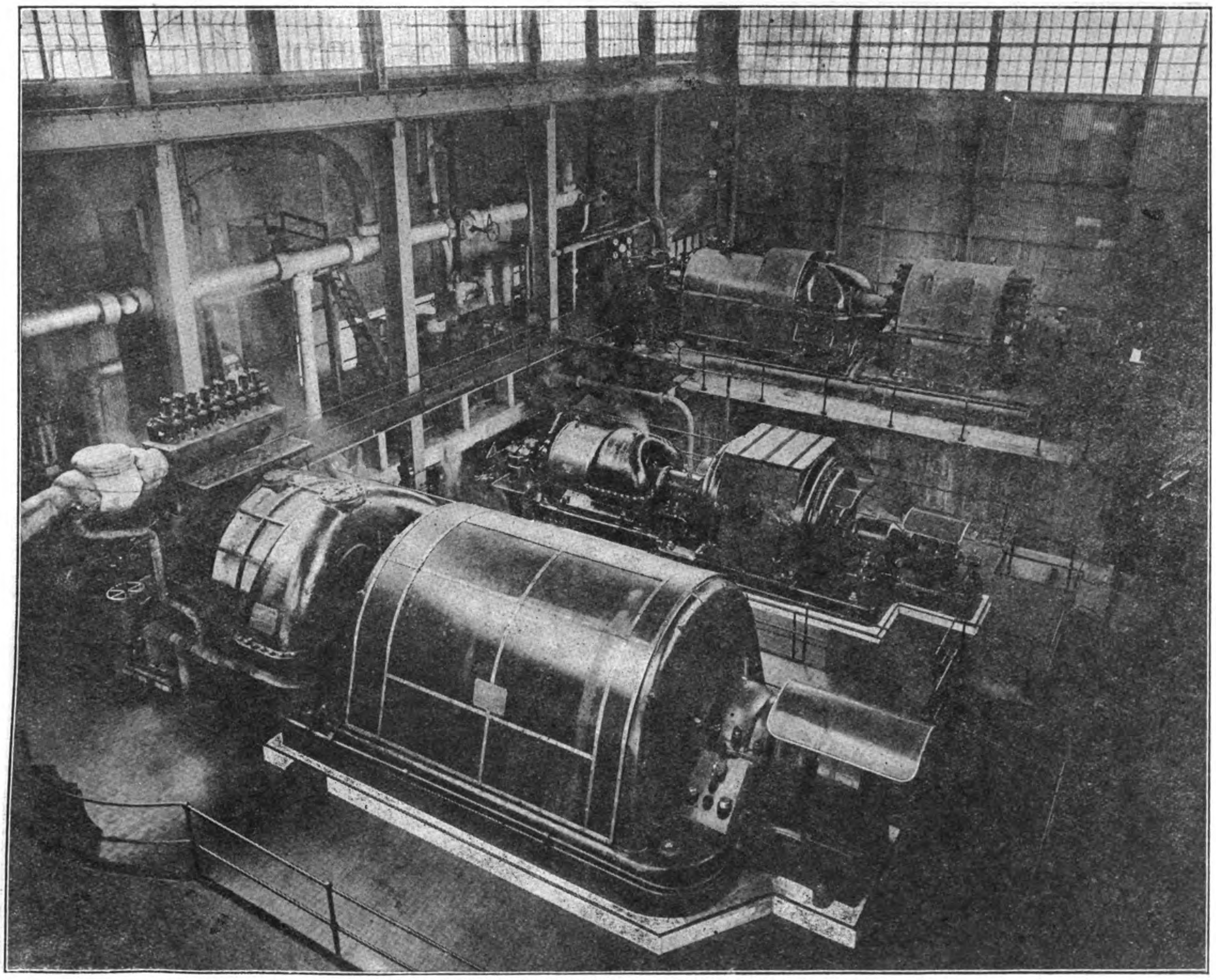
Flood lighting of the exterior of buildings with sources concealed at a distance is a development which may reasonably be expected in the near future in view of the number of new buildings about to be erected. Already two flood lighting installations are in operation here, one for lighting the exterior of a restaurant in Nanking Road, the other for enabling a building contractor to carry on work at night.

Transformer Sub-Stations

	Number	Capacity in K.W.
Transformers installed during the year ...	36	20,570.0
,, disconnected during the year	27	4,457.5
Nett increase for year ...	9	16,117.5
Sub-stations Commissioned	10	
,, Dismantled	3	
Nett increase for year ...	7	
Pole Transformer stations erected	2	
,, ,, ,, dismantled ...	5	
Nett decrease for year ...	3	

Grand totals at end of 1919:—

Sub-stations	73
Pole transformers Sub-stations... ...	11
Transformers in Sub-stations	123
Capacity of Transformers...	50,355 K.W.



RIVERSIDE POWER STATION—1916 EXTENSIONS
View Looking North Showing G.E.C. 10,000 K.W., Fraser and Chalmers-Vickers 5,000 K.W. Sets in Operation, and Parsons 10,000 K.W. Set Nearing Completion

The following sub-stations and transformer houses have been commissioned during the year:—

Post Office	Va Woo Zung	Waterworks
Zeng Foong	Foh Shing No. 4	Kiaochow Road
Chungking Road	Dent Road	Whashing Road
	Pao Cheng Mill.	

House Service Connections

Services connected	5,107
,, disconnected	479
Nett increase for year ...	4,628

Power—Industrial Supply

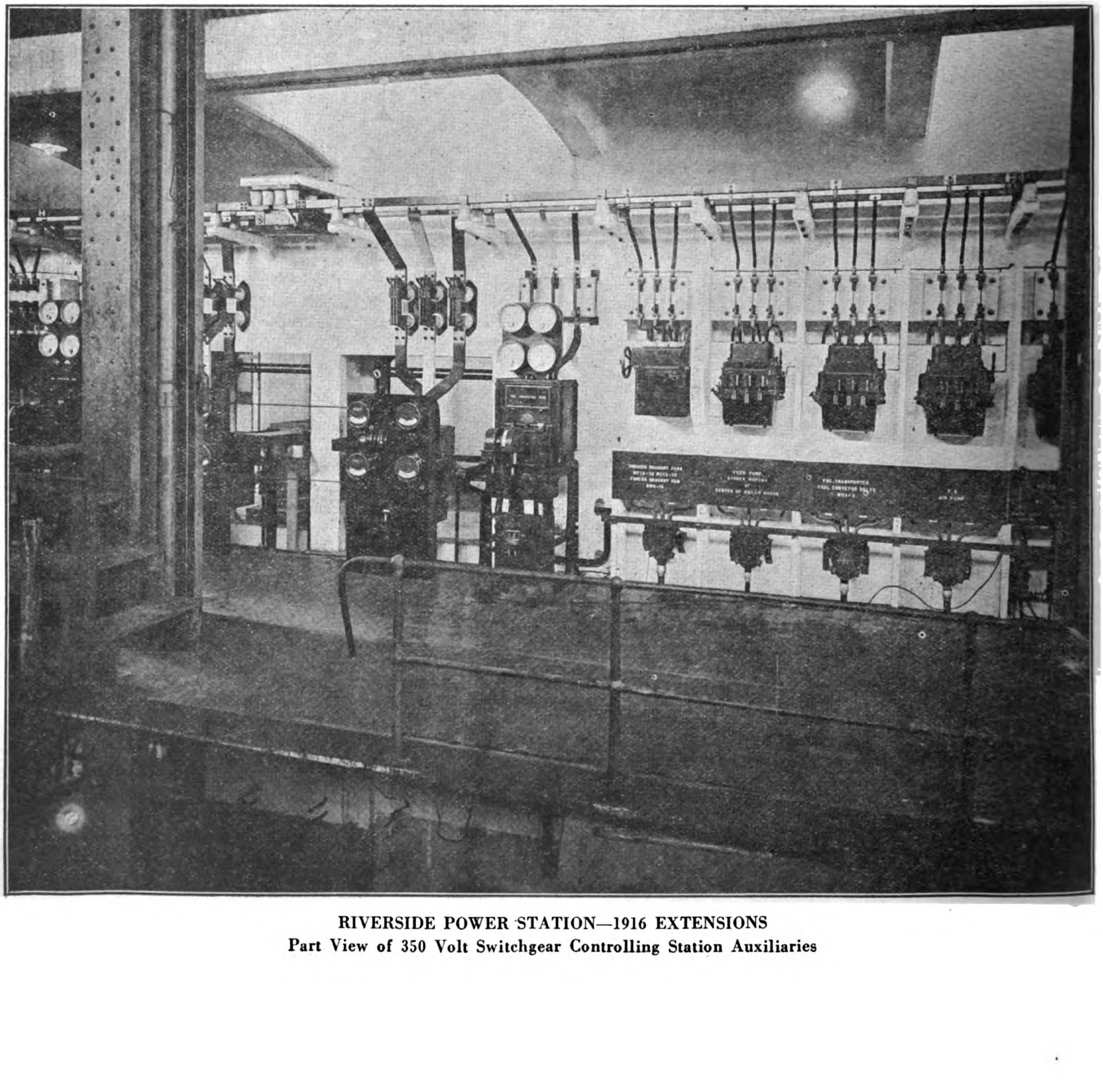
The year's working has been identified with an ever increasing demand upon the part of the smaller power consumers. This will be apparent from the large increase in the total horse-power of motors connected compared with the relatively small number of large power consumers connected during the period under notice. Amongst the latter may be mentioned: Nagai Wata Kaisha's Nos. 7 and 8 Cotton Mills, Foh Shing No. 4 Flour Mill (extensions), Foh Shing No. 6 Flour Mill, Zang Foong Flour Mill (extensions) and Shanghai Waterworks Co. (extensions). A large number of mills and factories are, however, now being built, and their electrification is expected during the current year.

The following is a summary of the year's progress so far as the installation of motors is concerned:

	Number.	*Horse-power.*
Hired Motors connected during 1919...	94	1,332.2
Consumer's Motors connected during 1919	210	3,806.41
Lift and Direct Current motors connected during 1919	10	117.05
Total for year ...	314	5,255.66
Total Hired Motors connected to December, 1919...	824	14,289.85
,, Consumer's Motors connected to Dec., 1919	1,149	17,722.05
,, Lift and Direct Current motors connected to December, 1919	120	1,050.35
Aggregate Total (December, 1919) ...	2,093	33,062.25

The above results represent an increase of 17.7 per cent. in the number of motors and an increase of 19 per cent. in the horse-power connected during the year.

The outstanding feature of the year is the intensive industrial activity which followed immediately upon the cessation of the war. The benefit accruing to this department as an outcome of this



RIVERSIDE POWER STATION—1916 EXTENSIONS
Part View of 350 Volt Switchgear Controlling Station Auxiliaries

state of activity will not be felt in full measure for some time, but it is noteworthy that the number of units sold to cotton and flour milling undertakings during the year have increased by 18.18 per cent. and 21.51 per cent. respectively.

It is of interest to note that the increase in the horse-power of *hired motors* during 1919 is appreciably smaller than that recorded during the previous year. Upon the other hand, the horse-power of motors owned by *consumers* has been greatly increased, thus indicating the existence of a state of confidence in electrical driving which justifies the expenditure of capital by the *consumer.*

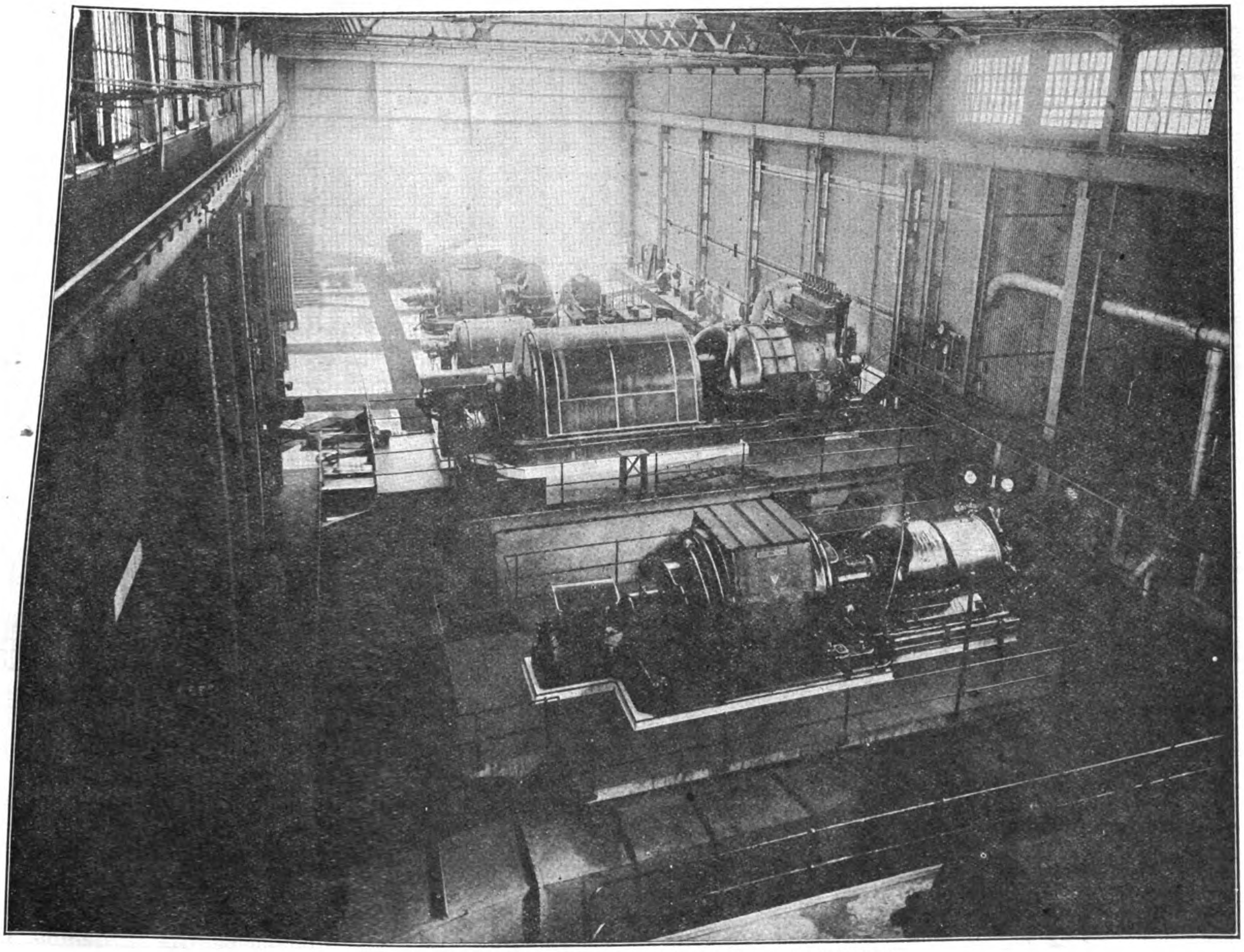
The department's provision of motor-hiring facilities has done much to foster this state of confidence and is still available for those undertakings which are without the means for providing their own driving plant or which are desirous of embarking upon industrial propositions which, for the moment, do not justify heavy capital expenditure. The existence of such facilities has undoubtedly done much to assist in the inception of what are now flourishing concerns.

Many industrial undertakings alike with this department, have been seriously embarrassed during the past year owing to shortage of motor stocks. There are many local concerns awaiting deliveries of motors which are unable to put their plants into commission. The department has been able to relieve the situation to some extent by placing its stock of motors at the disposal of consumers and, by this means, two large cotton mills have been able to place their plants in operation and thus avoid the delay which would otherwise have been associated with the non-delivery of their own motors.

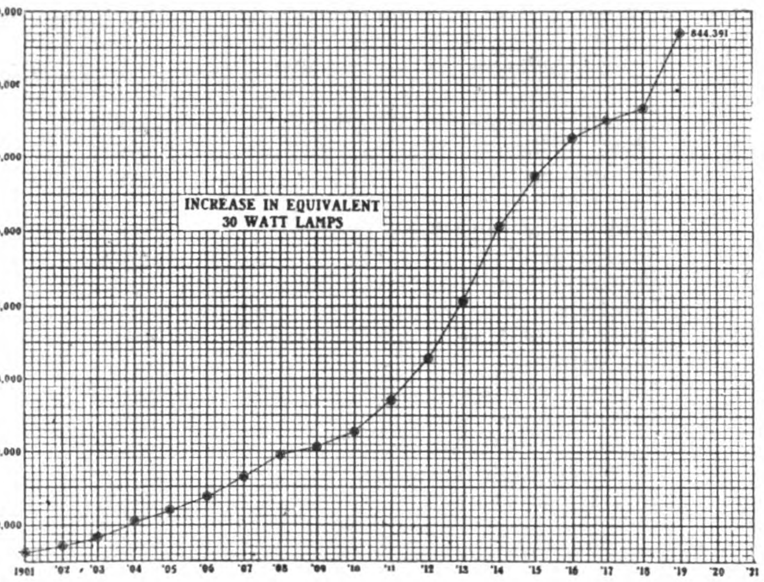
The following schedule will be of interest in that it shows the power required for the operation of Shanghai's leading industries:

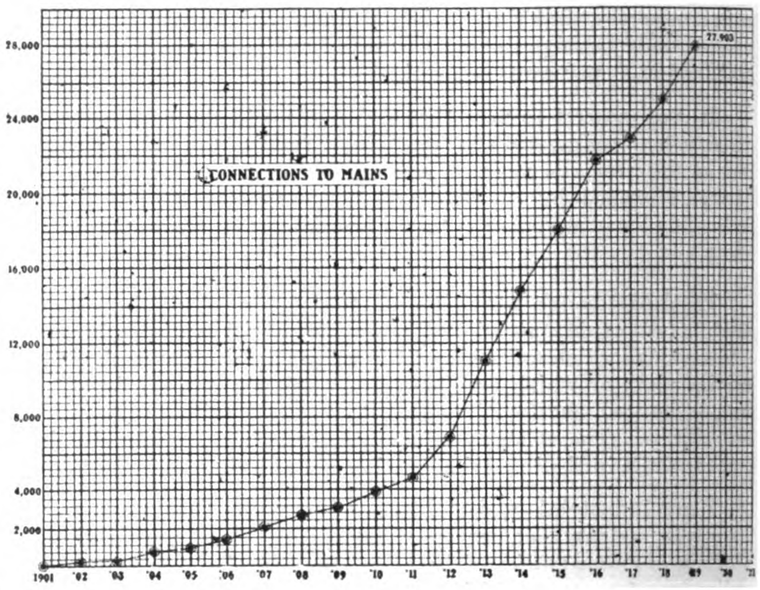
Industry.	*Total Horse-power Installed*
Cotton Spinning and Weaving	18,800
Flour Milling	3,300
Oil Milling	1,570
Rice Hulling	1,235
Cold Storage and Food Products ...	748
Lumber Milling	1,507
Press Packing	444
Printing	1,230
Cigarette Making	334
Tea Polishing	154
Concrete Mixing	552
Jute Weaving	335
Engineering Workshops	1,438
Cinematograph Operation	161
Silk Manufacture	212

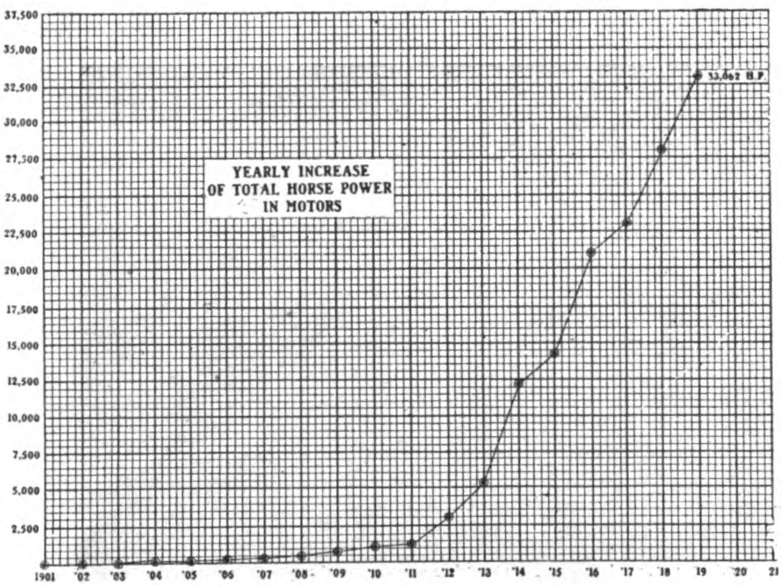
It now seems to be generally accepted that the prospects of Shanghai becoming an important industrial centre are exceedingly encouraging. To a very great extent this development will depend upon the continued availability of cheap electric power. If the natural development of power supply is retarded, there is a probability of new industries locating in other parts of China to the detriment of Shanghai. The continuance of a comprehensive power supply will enlarge the scope of industry and reduce its limitations.

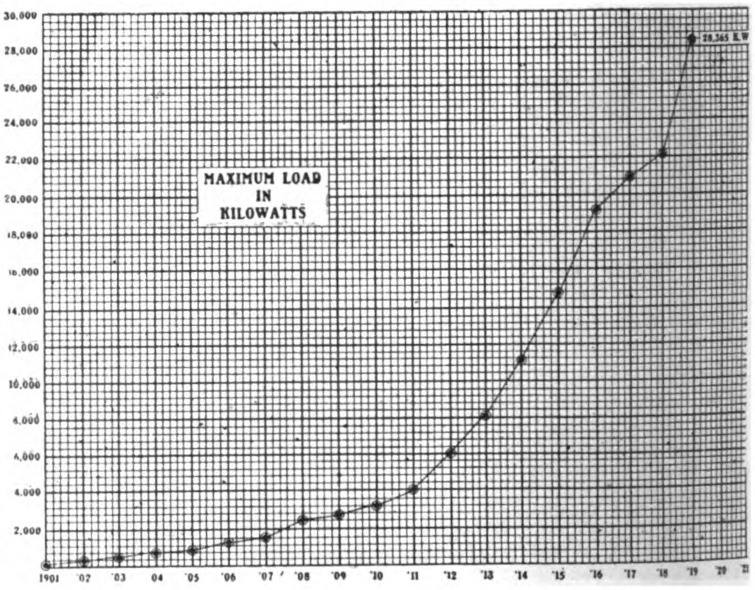


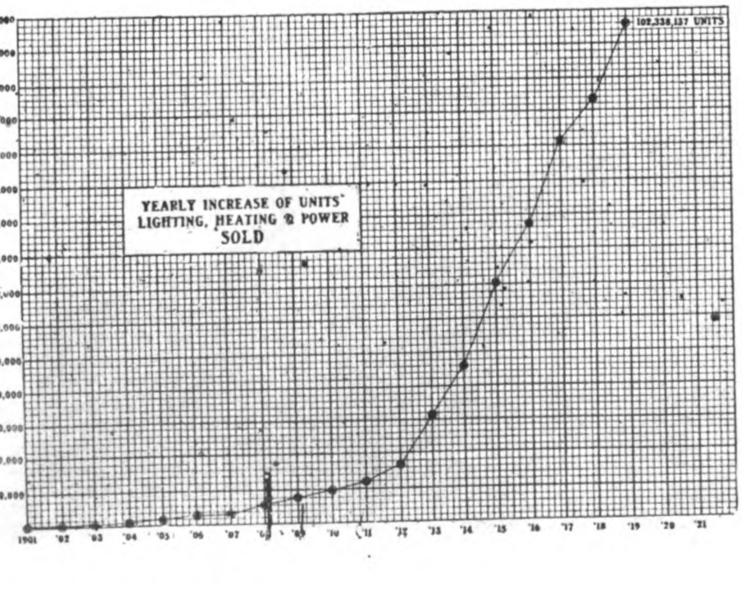
RIVERSIDE POWER STATION—1916 EXTENSIONS
Turbine Room Looking South. Shows Fraser and Chalmers-Vickers 5,000 K.W. Set, G.E.C. 10,000 K.W. Set and two 5,000, two 2,000 Sets in Distance

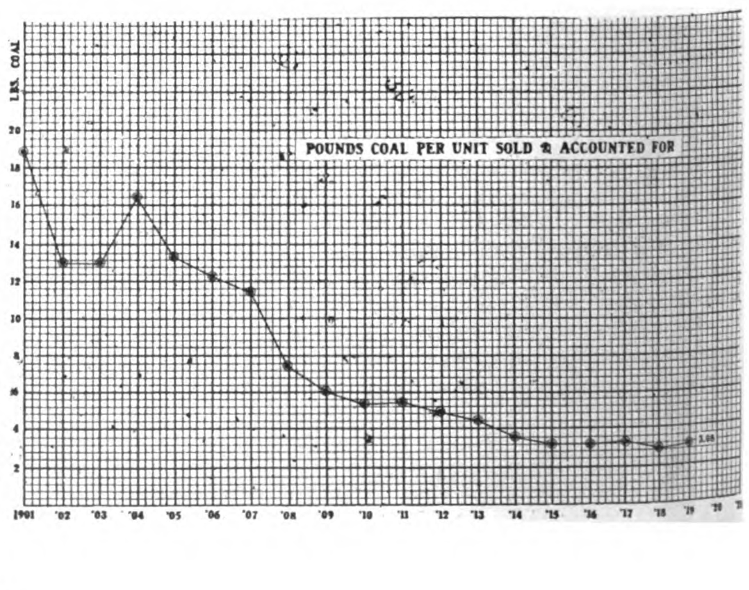

INCREASE IN EQUIVALENT
30 WATT LAMPS
844,391


CONNECTIONS TO MAINS


YEARLY INCREASE
OF TOTAL HORSE POWER
IN MOTORS

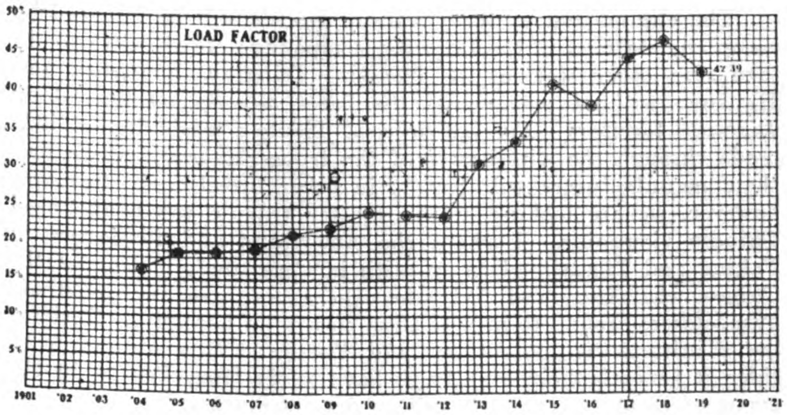

MAXIMUM LOAD
IN
KILOWATTS


YEARLY INCREASE OF UNITS
LIGHTING, HEATING & POWER
SOLD
102,338,137 UNITS


LBS. COAL
POUNDS COAL PER UNIT SOLD & ACCOUNTED FOR

It may further be attended by economic and social effects benefiting employers and employed alike.

Power is the basis of industrial civilization. Industrial development and standards of living are closely dependent upon the *per capita* use of power. The report of the British Reconstruction Committee, which attracted such wide attention last year, presents a most interesting series of statistics showing that the average net output of workers increases consistently and almost directly as the power use *per capita*. The report presents the following conclusion, very pertinent to any consideration of our own plans for the future.



"It is scarcely possible to exaggerate the national importance of a technically sound system of electrical supply, because it is essentially one with the problem of the industrial development of the country, which largely depends upon increasing the net output per head of workers. In the U. S. A. the use of power, where it can be used, is nearly double what it is here. On the other hand, not only are the standard rates of wages higher in the U.S.A., but living conditions are better. There is little doubt that in the U.S.A. the average purchasing power of the individual is above what it is here, and that this is largely due to the more extensive use of power which increases the individual's earning capacity. The best cure for low wages is more motive power. Or, from the manufacturer's point of view, the only offset against the increasing cost of labor is the more extensive use of motive power. The solution of the workman's problem, and also that of his employer, is the same, viz.: greatest possible use of power."

Heating and Cooking

Bearing in mind the continuance of the relatively high rates for heating and cooking supply which have prevailed during the past year, it is a matter for both surprise and congratulation that the amount of energy sold for these purposes has actually increased over that sold during the previous year.

A further satisfactory feature is associated with the fact that the demand for heating and cooking apparatus created by the Chinese consumers is steadily and rapidly increasing, as will be evidenced by records which show 548 Foreign and 344 Chinese heating consumers at the end of the year under review.

The demand for hired heating and cooking apparatus has been such as to completely exhaust available stocks of radiators, which were thought to be ample. Suitable steps are being taken to avoid future shortage. A new showroom is about to be opened in a central position and this will be utilized to the best advantage for the purpose of bringing the various applications of electricity, particularly heating and cooking, to general notice.

Now that the resumption of more normal coal prices has allowed the department to effect substantial reductions in the price of energy, a very considerable increase in the demand for heating and cooking supply may be confidently anticipated.

The following figures will serve to indicate the progress of this important section of the department:—

Number of Hired Radiators in Service	1,672
,, ,, Cookers ,, ...	79

"Get-Rich-Quick" Coal Men

In the Annual Report for 1918 attention was invited to the coal resources of China, and the fact was deplored that relatively so little had been accomplished by Chinese mining interests to develop the country's coal resources on a scientifically commercial basis. It is gratifying to observe that latterly there has appeared more activity in the Chinese coal market, and more varieties of native coal are now appearing in Shanghai. On the other hand the prices asked for these coals are yet far too high to make them attractive enough to purchase in bulk quantities; moreover, with a few exceptions, the risk of not securing regular deliveries is too great to justify the placing of contracts for the amount of coal required yearly by the department. Nevertheless, the signs of the times are perhaps more encouraging than they were twelve months ago, and the hope may be expressed that the get-rich-quick obsession of those Chinese having concessions for coal fields may give place to a sounder commercial spirit, and that the development of the country's coal fields may follow the more progressive practice obtaining in other countries, and in those coal-producing companies in China in which foreign influence prevails.

Riverside Power House Extensions

The turbine room was extended by 152-ft. by 60-ft. to accommodate the two new General Electric 18,000 K.W. turbo-alternators. The design of this extension was prepared by the drawing office staff of the department, and the steelwork fabricated and erected by the New Engineering and Shipbuilding Works. The concrete foundations for the building and the supports for the turbines were designed by and carried out under the supervision of the Public Works Department. An auxiliary turbine room was also erected on the south-west side of the No. 1 boiler house for the housing of the two 2,000 K.W. Willans turbines.

A scheme for further enlarging the Riverside Power Station, together with extensions of the transmission and distributing system was explained in my Report to the Electricity Committee dated December 22nd, 1919, and published in the "Municipal Gazette" on January 29th, 1920.

Financial

The nett profit for the year after providing Tls. 519,256 for depreciation and Tls. 442,152 for interest, was Tls. 386,326. The estimated profit was Tls. 332,123. The estimates for 1920 indicate a profit of Tls. 735,503 after providing Tls. 585,000 for depreciation and Tls. 559,500 for interest. In June 1919 the sum of Tls. 242,000 was paid over to the Council's general funds from the profit of 1918.

The European staff at the end of the year numbered 84. With one exception all those members who had been on war service in H. M. Forces returned to Shanghai and resumed duty with the department. The Chinese staff numbered 1,671.

Owing to the long overdue home leave being given to some members of the staff, and the delayed repatriation of those who were on war service, the department still suffered through shortage of staff. The efforts of those who were called upon to carry on, and the loyal spirit of co-operation which has always marked the relations between the executive and the staff, are very greatly appreciated.

The Cost of Bicycles

In common with everything else, the prices of bicycles have increased, and we are indebted to the Raleigh Cycle Co., Ltd. of Nottingham, England, for some statistical information as to the cause. Comparatively with 1914, prices of labor and material in the cycle trade have risen enormously. Machinists' wages have risen 142 per cent., laborers' wages 165 per cent., and toolmakers' wages 182 per cent. In material, the following are a few typical instances—Steel (which enters so largely into the construction of the Raleigh as distinct from ordinary bicycles) has risen 189 per cent., tubing has risen 300 per cent., chains 208 per cent., enamel 90 per cent., and saddles 155 per cent. Packing-case timber—an item in costs, for bicycles have to be packed for transport—has risen no less than 280 per cent. In addition to this, the hours of labor are not so long as before the war, no overtime is worked, and it is not possible to work on Saturdays, which all involves a further increase in the cost of production. Notwithstanding this, the price of the Raleigh bicycle has not been increased at all proportionately. The increase, all round, compared with pre-war figures, is approximately 75 per cent. This result has been achieved by extensions of the great works at Nottingham, which allow of a much larger output, and the benefit of this is being given to the cycle-buying public, by keeping the price at a much lower figure than would have been possible had the output not been enormously increased.

Restoring China's Sovereignty

Replacing Railway Guards, with Aeroplanes, Autos and Macadam Roads

WHY should not the American Government withdraw its troops from North China? In co-operation with other Powers our troops are protecting a railway line in China, keeping open the passage from Peking to the sea and *vice-versa*, against the possibility of another Boxer outbreak. Surely, this continued violation of the territory of a great Sister Republic ought not to continue after our condemnation of Japan's presence in Shantug. How can we justify the presence of an armed American force in China and be consistent?

China won her right to sit at the Council Table at Paris. She nobly responded to the President's appeal to enter the war against Germany and religiously followed the advices from Washington. She was ready to send her millions to fight for Humanity in France. She did send hundreds of thousands of her sons to do the work behind the lines. She is to be a charter member of the League of Nations. China of 1920 is a new China. A new spirit of nationalism, of patriotism, of self-sacrifice has displaced provincialism and hostility towards foreigners. China has proven that she can resent foreign aggression. The boycott against Japanese goods will go down in history as marking the turning point from a state of apathy to one of passive resistance. If they hurry a little it will not be long before they will be ready to fight for themselves.

We are assured that in the twenty years since 1900, a new nation has been born; the instincts, customs, habits and thought of centuries have been overturned. The horrors of the Boxer year can never be re-enacted in China. There should be no further necessity to doubt the peaceful, kindly, gentle, proclivities of a people whose proclaimed ambition is to lead the world in peace and disarmament. Never again will the world be called upon to chastize China for her massacres of Christians in the north or her barbarous treatment of Frenchmen unlucky enough to cross the Tongkin border line. Why then, in the face of these truths, attested to by every one of China's American friends, should we maintain a military force at Tientsin, just because of a foolish old treaty exacted in 1900 as a guarantee against a recurrence of the events of that fateful year?

We hear the immediate reply of those who doubt China's regeneration, "oh! we cannot do that, we cannot break our international agreements or escape assuming our share of the burdens imposed by the treaty." Fiddlesticks! Is not China to be a member state of the League of Nations, when all these limitations of her sovereignty will be abolished? What are old, worn out, international agreements in comparison with justice to a great Sister Republic? Did we not break loose from the international pack and by implication, accuse our Allies of extortion when we remitted our share of the Boxer Indemnity? Why not finish the job so well begun by ordering the regiment at Tientsin and the Guards at Peking to return home at once. What a wonderful, practical exhibition of our great sympathy for China would be given to the world by such a step?

Considering the great change we are told has occurred in the Chinese character in twenty years, and the strides in aerial navigation, why cling to the hallucination that Peking can ever again be out off from the sea? A small aeroplane detachment stationed at the Legation should be a sufficient guarantee of prompt escape in the event the Chinese should have a relapse and go once more on the rampage against foreigners. At all events, it is inconceivable that any demonstration will ever be made against the Americans. With the international port of Tientsin only an hour away by plane, Tsingtao, Dairen, Port Arthur and Korea, three to four hours, and Shanghai six hours, why maintain our troops in idleness guarding a railway for the relief of the Legations, when the rickety old capital could be bombed to powder in an hour by a few squadrillas having their bases in the international settlements or in Japanese territory?

The elimination of these railway guards will be followed by aeroplane stations in the Legation compounds, which will call, in turn, for other stations at Tientsin, Tsingtao, Shanghai and Hankow, without mentioning the bases already established in Japanese territory. Foreign firms at Tientsin might lose a little trade through the withdrawal of the troops stationed there, but their manufacturers will benefit in other directions. Perhaps, however, we are looking at this matter from a too pronounced Chinese viewpoint. Perhaps the Americans and foreigners in Peking and Tientsin place no faith in the transformation of the Chinese character, and feel safer when there are some of their own soldiers around to protect them in case of necessity. Perhaps the Ministers-Plenipotentiary and Envoys Extraordinary consider it beneath their dignity to have to fly from Peking in the event of trouble. It is difficult to open a market for aeroplanes under such conditions. But if not aeroplanes, why not automobiles and trucks. Every Minister has an auto and has no place to go in it.

Why should not the Powers, led by America, make a joint demand upon China for the immediate construction of a boulevard, not a mere road, between Peking and Tientsin, to be continued northwards to Shanhaikwan and southwards, if necessary, to Shanghai. On the condition that these roads are completed within a reasonable time, the railway guards will be withdrawn, and not before. Why place all our eggs in one basket and expose the lives of the Ministers, Legation staffs and the hundreds of foreigners now residing within the walls of Peking, to the mercy of a single track railway? Why not have the boulevard as a supplementary line of retreat?

In the event of trouble what guarantee have the Ministers and foreigners that they can commandeer enough railway trains to escape in?

The Chinese Government would welcome such a chance to demonstrate their friendly feelings and complete change of heart. They would receive great support from the whole nation. The funds undoubtedly would be subscribed over night to construct a road, or several roads that would facilitate the evacuation of the capital and the sacred soil of the Metropolitan province from the presence of the foreigner. The Chinese officials would also provide themselves, on the side, with a proper road for joy-riding, and a quick egress to the security of the Foreign Settlements whenever they have a sudden attack of official sickness, or are striken with a sore leg over night, get sulky, or when the tide of their political fortunes counsels a quick gataway, and the trains are watched. An auto on a dark night has many advantages other than purely political, which the young bloods of the capital have not been slow to recognize. Think of the joy of riding to Tientsin for a night's frolic with the prize beauties of Soochow and back again in Peking in time for official duties.

If, through the influence of the Diplomatic Corps, such a boulevard can be built, it will still have the satisfaction of knowing that aeroplane can be utilized for a more rapid exit if hard pressed. They will then have created a market for road machinery, autos and planes. With a good, hard, smooth, tarred, macadam highway from Peking to the sea, the foreign Governments need have no further anxiety about the safety of their representatives, and therefore no necessity for retaining their armed forces on the ground in violation of China's sovereignty and the provisions of the League of Nations.

Let us be practical. Out with the Legation Guards! Home with the Railway troops! Build the great highway to the sea!

G. B. R.

Chinese Flock to France

A New Industrial Movement

WHAT is behind the sudden desire of Young China to be educated in France? Ten to twelve thousand students are expected to arrive in that country during the next two years. A plan has been launched whereby the French Government with the co-operation of the Chinese Government, is to receive Chinese students for a one year training in "civilization." They will then be returned to China to spread the story of the great progress of civilized countries. Students at the rate of one hundred and fifty a month have been coming to France for the past year, and during the year at least eight hundred a month are expected, the French steamship companies offering a special cheap rate for this class of traffic. It is claimed that these men are not of the lower classes but come of good families and anxious to learn the methods of other countries.

The influx is ascribed to the fact that the Chinese are no longer attracted by German or Japanese colleges, owing to the war and their resentment against Japan over the Shantung award, and their aversion to the United States because of the restrictions upon Chinese immigration which prohibits their entrance except under the most humiliating conditions. In seeking for the real cause of this sudden change in Chinese yearning for foreign education, is it not more probable that the stories of French life carried back to China by the hundreds of thousands of coolies who worked behind the lines has had something to do with the movement. It was the first taste these coolies ever experienced of the joys of civilized life, good pay, comfortable lodgings and an intercourse with a white element which accepts them as equal. Their experience in France opened their eyes to the difference in treatment accorded the Yellow Man by different families of the White Race. It is entirely probable also that the movement has been stimulated by the French Government to attract labor to its mills and industries during the reconstruction post-bellum epoch, and so educate thousands of Chinese mechanics in French methods of manufacturing. France is after her share of world trade as soon as she is in a position to get after it. As heir to the German mining regions, France will take the former's place in the metallurgical industries of the world, and within a decade will become the most dangerous competitor to England and America for foreign markets. While America is educating the Chinese along ethical lines and inoculating them with the germ of Democracy, the French are setting out to capture their material education. Ten thousand Chinese trained in the handling of French machine tools and versed in their ways of doing things, will be a more effective bid for the metallurgical trade of China than twenty thousand students turned out of American colleges with degrees of Doctor of Philosophy or Law.

The Chinese have been sending their students to us for some years as the result of the remission, in part, of our share of the Boxer indemnity. We have been too prone to take undue credit to ourselves for what we are pleased to call our wonderful generosity and justice towards China. It is well to remember the swift response of one of China's statesmen at the time the Boxer indemnity was returned, on the condition that it be expended in educating young Chinese in American colleges. He made a rapid calculation of what it would cost for the passage and upkeep of these students and proved that it was a good stroke of Yankee business, as every cent was returned to American merchants, boarding house-keepers, and colleges. He positively refused to admit there was the slightest trace of philanthrophy or justice in our action. Yet there are many others who recognize the the sincerity of our desire to assist them, and many who look to us as their spiritual guide in the future. But there is a wide gulf between the class and the masses of China who are seeking the material advantages of a connection with this country, the right to enter and work at our trades, learn our arts and take back with them our practical ideas. To this class the gate is barred. This is the class upon whom will fall, the industrial regeneration of China. If they cannot gain their experience in this country, they will apply elsewhere.

Here we have the reason for the great influx of Chinese into France to remain there a year or so and return to China to spread the ideas of "modern civilization" as it is euphemistically called by the French and Chinese authorities. We have invited attention in other articles to the preparations being made to place China on her feet with American money and loans and the preliminary steps to wrest from us the material benefits that should accrue to our manufacturers in the supply of materials. With an engineering and artisan class educated in France or Europe, they will demand French and European tools, machinery, and the other adjuncts to industry they are accustomed to handle.

What between our idealism in the matter of loans, our stringest exclusion laws, and other factors, there is an excellent opportunity for our European competitors to gradually dominate the great Chinese and Asiatic market. There is a political feature to this movement that compels attention. Mr. John Moffat, who arrived in New York the other day, came with a message of what he termed nation-wide interest concerning the new menace of the Far East and a seasonable cure for it. He says:

"This is one of the great epoch-making schemes of the world. Ancient China civilized is almost too remarkable to be believable. It is not an unreasonable supposition that China someday may be vitalized. Germany is working vigorously to acquire strength, man-power and resources from Bolshevist Russia, she still looks forward to war and domination through it, and is trying to absorb strength from Russia and again become a world menace. There is a great threat that Boleshevists may get hold of China if she remains in her present condition. China, sooner or later will have to adopt Western ideals. She may do it as a vassal of the Russian Bolshevist or she may do it as a great free sister republic. However, she does it, she will become a great Power. Thousands of Germans speak Russian and thousands of Russian speak Chinese. Germany, Russia and China have an unlimited supply of man power. With the Bolshevist element they are more than dangerous."

Mr. Moffat's plan is for the Americans to contribute funds for the purchase of a house in Paris for the Chinese Student's Committee, and is sent here by this organization for that purpose. He carries letters from Marshal Foch, André Tardieu and others. It is a peculiar picture of Chinese faith in our altruism. Barred from the United States by our exclusion laws, attracted to France by the experience of their compatriots during the war, and encouraged to go there by the Chinese and French Governments to educate them in "modern civilization," which in this case means industrial efficiency, the Chinese Student's Committee turns to the United States for the funds which will enable them to carry on. It is the same old story told in another way. Mr. Moffatt's letters to various millionaire patroners of charity and others, will bear fruit. Americans will finance the new movement. We will help the cause of civilization and bind China tighter to us through common ideals, but the material benefits that will follow such an investment will undoubtedly go to France. It cannot be otherwise. If Young China sets out to learn "modern civilization," they cannot do in the United States. The doors of Europe are open, ours are closed. We cannot have our cake and eat it too. Young China will look to us for spiritual guidance and in practical matters will turn to Europe.

G. B. R.

The Work of the Thrift Society

Mr. Wang Ching-hui, the founder of the Societe Franco-Chinoise d'Education Paris-Shanghai, and the promoter of the South West University delivered a very interesting lecture at the World's Chinese Students' Federation on the subject of "Chinese students in France." The lecture hall was crowded. Mr. Wang, in part, said :—

"I think that the present moment is very opportune for Chinese students to study in France so that they may learn from personal observation the strenuous measures being adopted in France in the direction of reconstruction so as to restore normal conditions. The war has driven

home one important lesson, namely that science is the decisive factor in modern warfare. The new elements introduced into the realm of belligerent operations, such as the submarine and the aeroplane, are all based on scientific principles. France lived up to this revelation, and her educational program was maintained during the war as far as circumstances permitted.

"In the 1st year of Min Kuo (1912) Mr. Li Yu-ying established the Western Education Thrift Society, the whole object being to send Chinese students to study in Europe under a thirft system whereby a saving of 50 per cent. of the usual expenses is effected.

"China, let us remember, has a dense population; she is of a vast area and has an exceptionally long history of an individualistic civilization. To bring about anything worthy of the name of reconstruction, we must rely on the effort of a large section of our countrymen to introduce the new civilization of he world to bring our own up-to-date. A Chinese studying abroad has the best opportunities to learn the principles of reconstruction by reason of his congenial environments. If we have something like 100,000 students abroad, we ought to say 'Let us have more.'

"It was originally planned that the annual expenditure to be incurred by each student under the thrift plan is to be $600. In some cases, students arriving in France failed to gain admission into one of the French universities because in some universities the scale of charges exceeds the provision of $600 a year; but these are exceptions to the rule. There were two other causes of disappointment, some of the students did not take with them the full amount of $600; some others did not follow the regulations of the society.

"Great difficulties were experienced in the beginning of the war on account of the non-arrival of remittances from China. Mr. Hu Wei-teh, the Chinese Minister in Paris, relieved the embarrassments of the students by advancing a total sum of 80,000 francs. The loans will, of course, be repaid upon the arrival of remittances from China.

"It is true that the cost of living has increased as a result of the war. But to counterbalance this condition comes the low exchange of the franc, which makes it possible to obtain as much as 6,000 francs in return for $600. The students under the thrift system will thus be put on the same financial basis as the students sent to France at government expense. Should the exchange rise within the next two years, which seems unlikely, the cost of living will, in all probability, correspondingly decrease.

"It is now plain that when we can send a student to France at an annual cost of $600, the expense is about the same as that incurred in Japan. It is lighter than what is charged at the Hongkong University. General Chen Chiun-ming is sending to France students from a number of districts in Fukien on the ratio of one to three students per district. The Canton Government is also adopting like measures. The results will mean an addition of from 100 to 200 students. If every province will follow this example, the results will certainly be very gratifying.

"Reference must here be made to the Industrial Educational Society. This society is run on a basis different from that of the thrift society. Its history is worth being recalled. Mr. Li Yu-ying opened a bean-curd factory in France and he employed Chinese laborers, and as they were well paid, they were able to afford the expenditure of their education after working for a time in Mr. Li's concern. In France foreign laborers are allowed to work provided they would agree to the conditions: they must work for wages on a uniform basis and they must answer the call of trade unions to strike. This means to say that only skilled labor is sure of employment. After working for one or two years, the earnings for wages will be enough to pay for the educational expenses."

The Royal Bank of Canada

The year 1919 has been a notable one for The Royal Bank of Canada. The fiftieth anniversary of the founding of the bank was commemorated this year and for the first time the total assets have exceeded the $500,000,000 mark. The past twelve months have also witnessed a great extension of the foreign connections of this progressive institution. An important development has been the establishment of branches in the leading centres of South America. Before the outbreak of the war The Royal Bank of Canada inaugurated the policy of extending its facilities to the continent of South America, but when 1,500 of the bank's employees were called to the service of their country, it was found necessary to postpone the establishment of new branches.

The conclusion of hostilities enabled the bank to proceed with its plans, and during the past year about a hundred new branches have been opened in Canada, the West Indies and Central and South America. On October 1 the Rio de Janeiro, Brazil, branch was opened for business, and this was followed a month later by the establishment of a branch at Buenos Aires, Argentine. Branches are also being established at Montevideo, Uruguay, Santos and Sao Paulo, Brazil, and at Barranquilla, Colombia.

In order to cope with the growth of business with France and to participate in the work of reconstruction, The Royal Bank of Canada (France) was organized and a banking office opened at 28 Rue du Quatre-Septembre, Paris, on June 2nd, 1919. Similarly in the previous year a branch of the bank was established at Barcelona, Spain, especially to cater to the large amount of business transacted between that country and Latin America. The Royal Bank of Canada has offices in London, at Bank Buildings, Princes Street, E.C., and an agency in New York at 68 William Street. The business of the latter has increased to such an extent that it was recently deemed advisable to purchase the fifteen-storey building in which were located the bank's premises.

At the beginning of the year 1919, the bank formed a very important association when the "London County Westminster & Parr's Bank, Ltd." bought stock of The Royal Bank of Canada to the nominal value of $1,000,000 for which it paid $2,000,000. This ensures a very close and valuable working arrangement and drawing facility, as the London County Westminster & Parr's Bank, Ltd., have world-wide connections and are one of the strongest financial institutions.

The Royal Bank of Canada has been one of the pioneers in the banking line in the West Indies, where the facilities extended have been of great value in the development of trade. Operations were commenced in Cuba immediately after the close of the Spanish-American war, and to-day the bank has thirty-two branches, covering all important points in the island and including five branches in the city of Havana.

The history of The Royal Bank of Canada has been one of remarkable progress. Founded 1869 under the name of 'The Mrechants Bank of Halifax," its importance as an international institution began in 1900, when the Head Office was moved to Montreal, and the name of the bank changed to the present one. In the year 1910 a series of important mergers commenced when the "Union Bank of Halifax" was taken over. This was followed in 1912 by the taking over of the "Traders Bank of Canada," in 1914 of the "Bank of British Guiana" and the "Bank of British Honduras," in 1916 of the "Quebec Bank" and in 1918 of the "Northern Crown Bank." To-day the total paid-up capital and reserves of the bank amount to $35,000,000 and total assets exceed $500,000,000.

The branches of The Royal Bank of Canada now cover the leading centres of Canada, the West Indies, Central and South America and the great financial centres of the world. In addition to the offices in New York, London, Paris and Barcelona, the bank has 544 branches in Canada and Newfoundland, 44 in Cuba, Santo Domingo, Haiti, Porto Rico and the French West Indies, 13 in the British West Indies and 15 in Central and South America. The bank is, therefore, in a position to offer unrivalled facilities to traders doing business with these countries.

Japanese Activities on C. E. Railway Evoke Serious Protest

Japanese activities in the zone of the Chinese Eastern Railway, North Manchuria, have caused great anxiety in the minds of Russians resident in the region, as well as to the Diplomatic Corps at Peking. The Foreign Technical Board, comprising representatives of America, Great Britain, France, Japan, China, Russia and the Czecho-Slovaks, which was appointed some time ago to control the operation of the railway, regarded the reported outrages by Japanese as too serious to be endured without complaint and on April 14, the following vigorous protest was made. When it is remembered that it comes from responsible foreigners its significance will be appreciated. The protest says:—

Whereas (1) Two Russian Railway employees at Imianpo were suddenly arrested and summarily shot on April 6th by some Japanese soldiers without trial;

Whereas (2) In the evening of April 8th two Russians were refused passage over the Sungari bridge at Harbin by Japanese soldiers, in spite of their passes entitling them to such passage. One of them was thrown over the bridge and the other had his head badly cut up by these Japanese soldiers. Both were badly injured;

Whereas (3) In the evening of April 8th eight railway employees were suddenly arrested at Hailar by some Japanese soldiers and were locked up in a Japanese Military car to be transported to some unknown destination;

Whereas (4) Three Russian railway men were arrested at Manchuria Station on April 10th by Japanese soldiers;

Whereas (5) These violent acts have created a widespread excitement and indignation among the railway employees and are most liable to precipitate grave troubles leading to the interruption of communications, the delay of Czech evacuation and the disturbance of the whole region, all of which tend to defeat the purpose and function of the Technical Board;

Whereas (6) These acts are regarded by the Technical Board as being in direct contravention to the Interallied Agreement covering the guarding of the Chinese Eastern Railway which duty was assigned to the Army of the Chinese Government by the Interallied Powers, and that the military forces of no other nation have any authority in the guarding of this Railway;

Whereas (7) The Technical Board protests in the strongest possible manner against the interference and high handed actions of the Japanese troops in these and similar instances, and ask for an assurance from the Japanese authorities that such acts will not be repeated.

Resolved (*a*) That this protest be placed on record.

(*b*) That copies of this protest be telegraphed by the Secretary of the Board to the Interallied Committee and that such member of the Board be requested to telegraph the same to the representative of his country at Peking.

(*c*) That the Japanese member of the Board be requested to hand a copy of same to the Senior Japanese officer commanding the Japanese troops in Manchuria and Siberia.

The above resolution was presented by the President and passed by the Technical Board, April 14th, 1920, with the representatives of Great Britain, America, France, China, Russia and the Czecho-Slovaks assenting and the Japanese Representative dissenting.

The Baldwin Locomotive Works

Locomotives Recently Built for Service in China

ONE of the most important fields in the world for railway development at the present time is China, where there is urgent need for the construction of a large amount of new mileage and the material improvement of existing lines. American manufacturers of railway equipment are aiding this development by furnishing motive power, rolling stock and other supplies; and locomotives of American design are proving well qualified to meet the requirements of the Chinese lines.

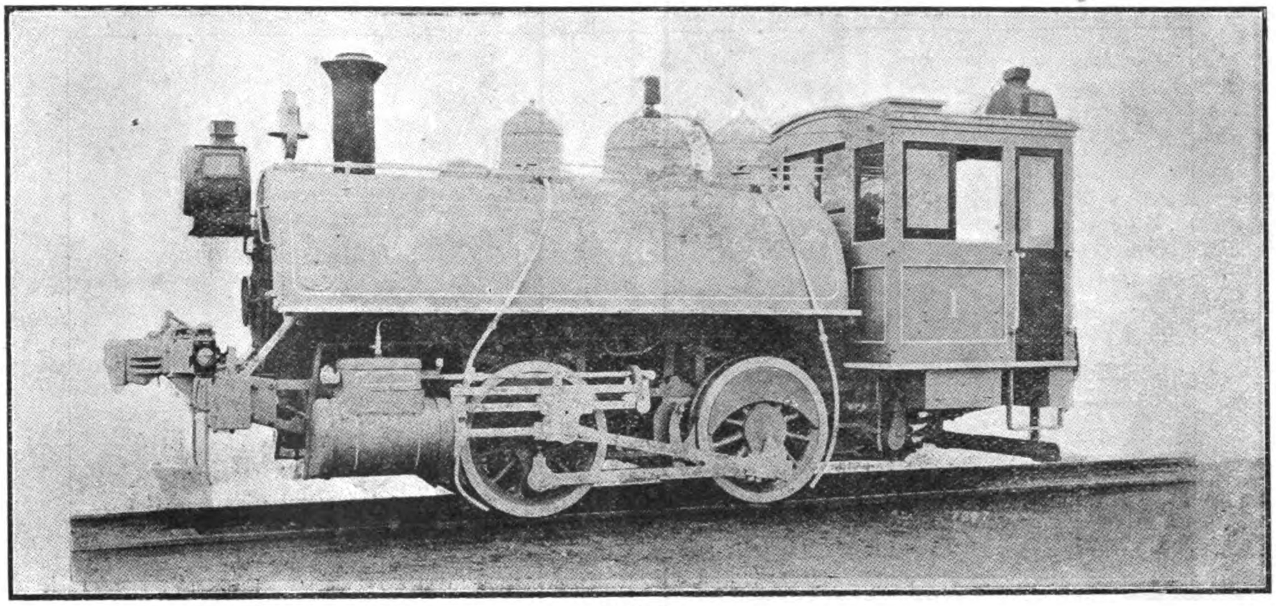


FIG. 1

During the year 1919, The Baldwin Locomotive Works built sixty-two locomotives for shipment to China. These represented twelve different types, designed for various service conditions. Five of these locomotives are shown in the accompanying illustrations.

The tank locomotives shown in Figures 1 and 2 were built for the Hupeh Government Mining Bureau, located in the Province of Hupeh. Two locomotives of each type were constructed, and they are the first engines to be placed in service on a new line. The four-coupled locomotive weighs 60,700 pounds, and has cylinders measuring 13 by 22-in., and driving-wheels 44-in. in diameter. With a short wheel-base, and all the weight on driving-wheels, this design is specially suitable for switching service. The six-coupled locomotive is considerably larger, and with a two-wheeled radial truck at each end, is suitable not only for switching, but also for local freight and passenger service. This wheel arrangement permits the locomotive to be operated in either direction without turning, and is specially suitable for service on lines having sharp and frequent curves. The total weight of this locomotive is 122.500 pounds, of which the driving wheels carry 96,500 pounds. The cylinders are 16-in. in diameter by 24-in. stroke, and the driving wheels are 44-in. in diameter.

Both these locomotives are of standard gauge, and are designed in accordance with American practice.

Figure 3 represents a locomotive of the eight-wheeled or "American" type, built for the Canton-Samshui Railway. This road handles an important passenger service, but the train loads are not very heavy, and a locomotive of this design is of ample capacity. The eight-wheeled type, when used for work that is within its capacity, is exceedingly efficient and economical to operate; and this locomotive represents the best practice for an engine of its weight designed to use saturated steam. The cylinder dimensions are 17 by 24-in., and the driving-wheels are 66-in. in diameter. The total weight of the locomotive in working order is 111,200 pounds, and the tender weighs 70,000 pounds additional.

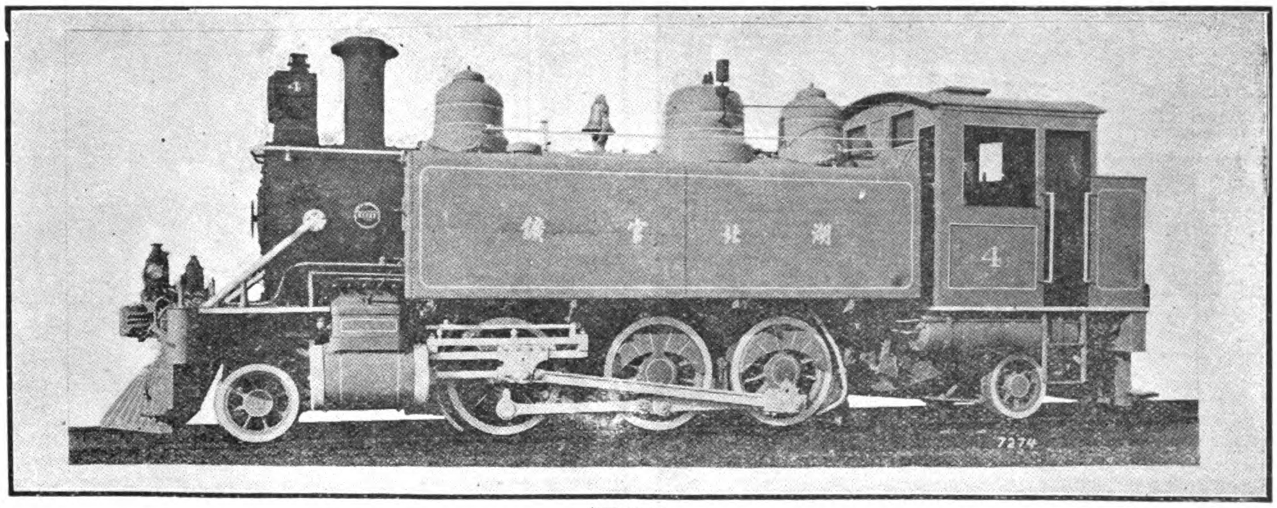


FIG. 2

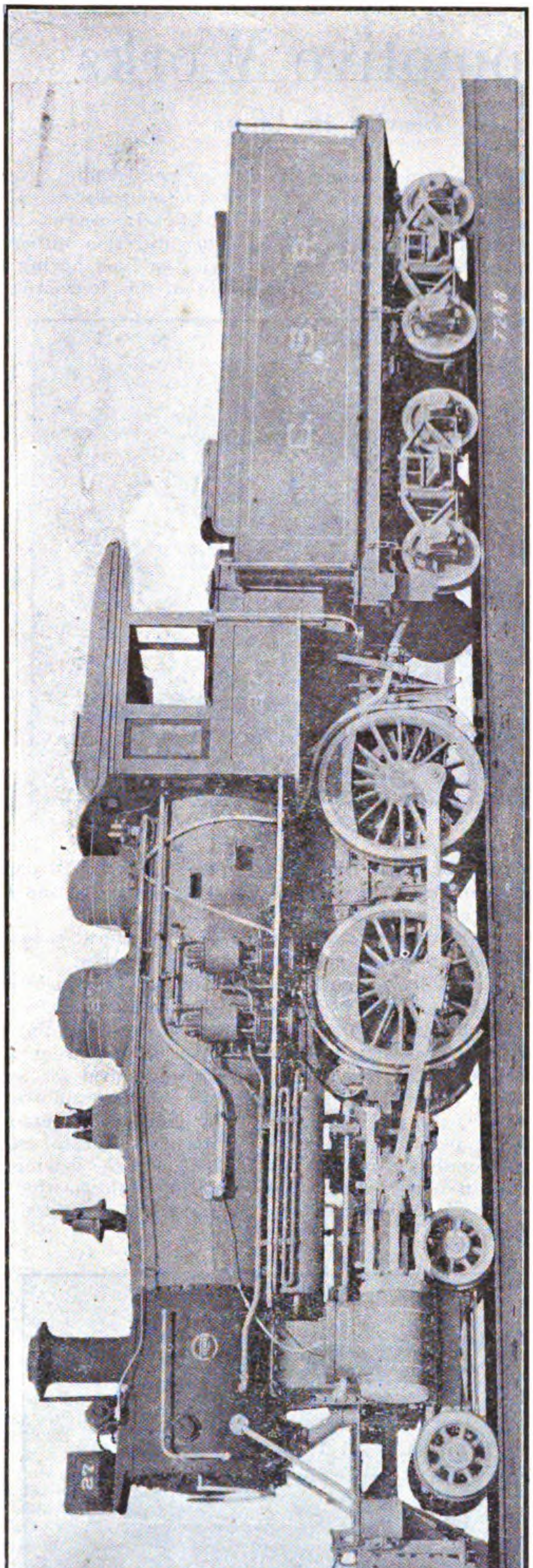


FIG. 3

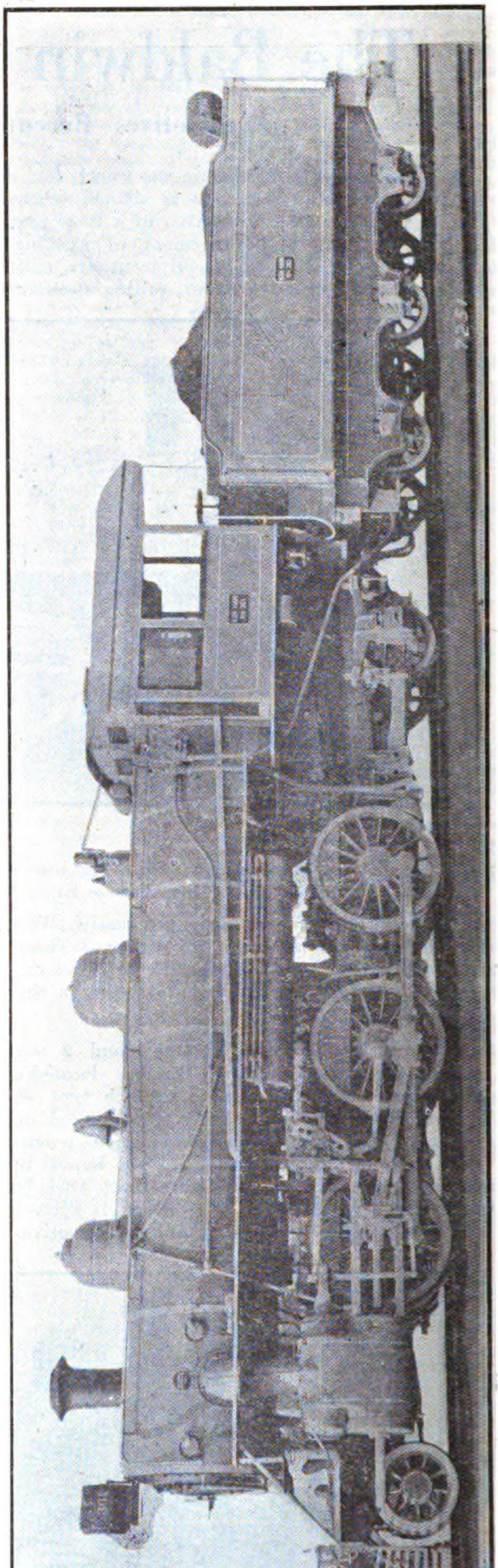


FIG. 4

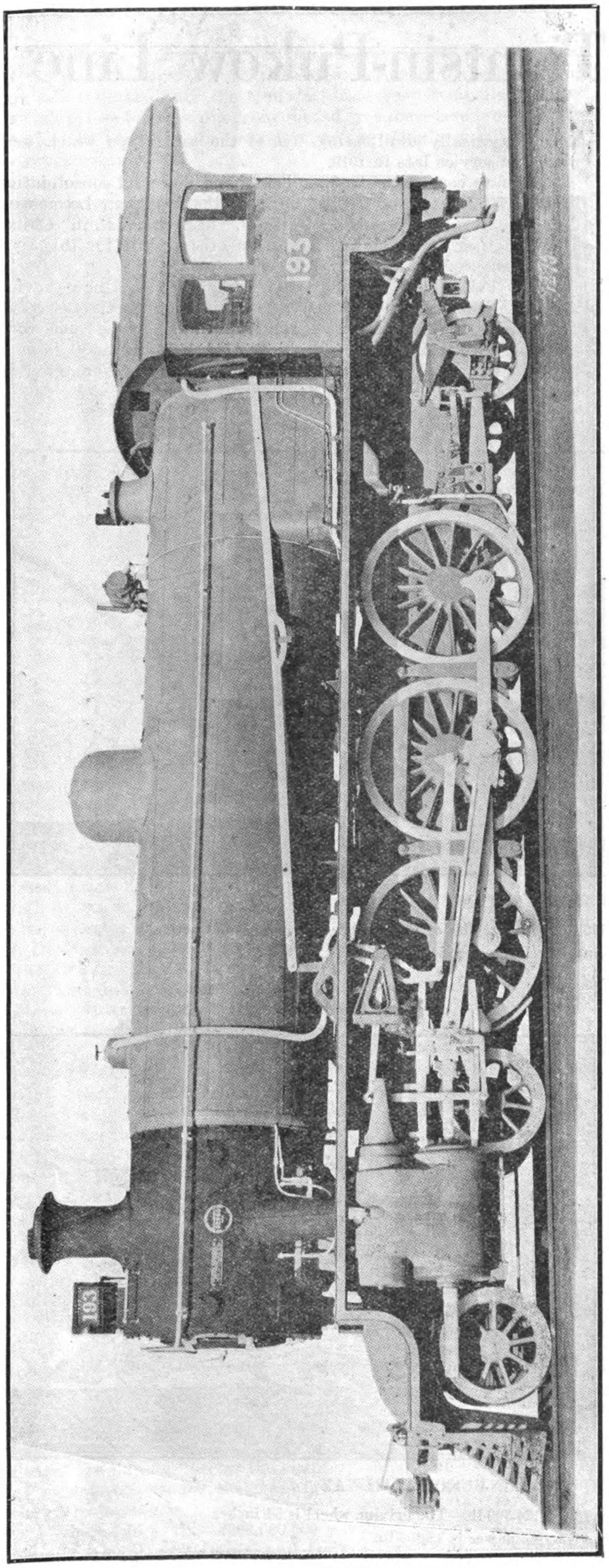


FIG. 5

Figure 4 represents one of ten Prairie type locomotives of interesting design, which were built for the Peking-Hankow Railway, one of the large Chinese trunk lines. The locomotives and rolling stock of this line are almost entirely of French design and European manufacture. The new Baldwin engines were built from designs and specifications furnished by the railway, with certain modifications, which conform to American practice, and are suited to Chinese operating conditions. They have considerable reserve capacity over that required to handle present train loads, and their flexible wheel-base will prove a great advantage in operating on this railway. These locomotives are equipped with super-heaters, and can be used in either passenger or freight service. They have bar frames and equalized wheel-loads, and with a two-wheeled radial truck at each end, they can easily traverse sharp curves. The steaming capacity is ample for heavy duty, and the boiler has a wide, deep firebox which is placed back of the driving-wheels and over the rear truck. The cylinder dimensions are 20 by 26-in., and the steam distribution is controlled by piston valves operated by Walschaerts valve gear. The driving-wheels are 59-in. in diameter. This locomotive weighs 154,600 pounds; and the tender, which is of the six-wheeled type with plate frames, weighs 92,000 pounds additional.

Figure 5 shows a large locomotive of the Pacific type for the Peking-Mukden Railway. This is one of a group of locomotives which have been specially designed to inaugurate a new passenger service, calling for the operation of heavy trains at fast schedules. The passenger locomotives heretofore used on this line, although designed with large driving-wheels for high speed service, are comparatively light and are inadequate to cope with the new train service. The Pacific type locomotives have the same size cylinders as those of the Peking-Hankow engines previously described, but the driving-wheels are 66-in. in diameter, thus giving higher speed capacity. The boiler carries a steam pressure of 200 pounds, and has a wide firebox placed over the rear truck. Interesting constructive details include plate frames, piston valves 11-in. in diameter, cast-steel piston-heads, and a light design of Walschaerts valve motion controlled by a screw reverse mechanism, which is placed on the left-hand side of the cab. The total weight of the locomotive in working order, without tender, is 171,900 pounds.

The tenders of these locomotives were built in the shops of the railway company, from material furnished by The Baldwin Locomotive Works.

These locomotives constitute an interesting addition to the motive power of the Chinese railways. They were all specially designed for the conditions to be met, and their success in service may be confidently anticipated.

American Safety Razor Opens Foreign Branches

Combining three of the largest safety razor manufacturers in the world, the American Safety Razor Corporation continues to attract favorable attention by the manner in which its business here and abroad is being developed.

Manufacturing and selling the Gem, Ever-Ready and Star dollar safety razors, the company is said to control 80 per cent. of this type of razor business throughout the world.

The high rates now charged by barbers for shaves are causing thousands of men to shave themselves. As a result safety razors, and these of the American Safety Razor organization especially, are in increasing demand.

With their products, which also include shaving brushes, soaps, powders, etc., widely known throughout this country, and a growing demand created in Europe, means were needed to distribute the products in foreign countries.

To this end the American Safety Razor Export Corporation, a subsidiary of the manufacturing company, was formed. This company handles the foreign sales and distributions for the parent company and is reporting excellent progress.

The constant growth of the company, in keeping with the official announcement of expansion plans, indicates that earnings for 1919 will be more than the estimate of $1,500,000 announced.

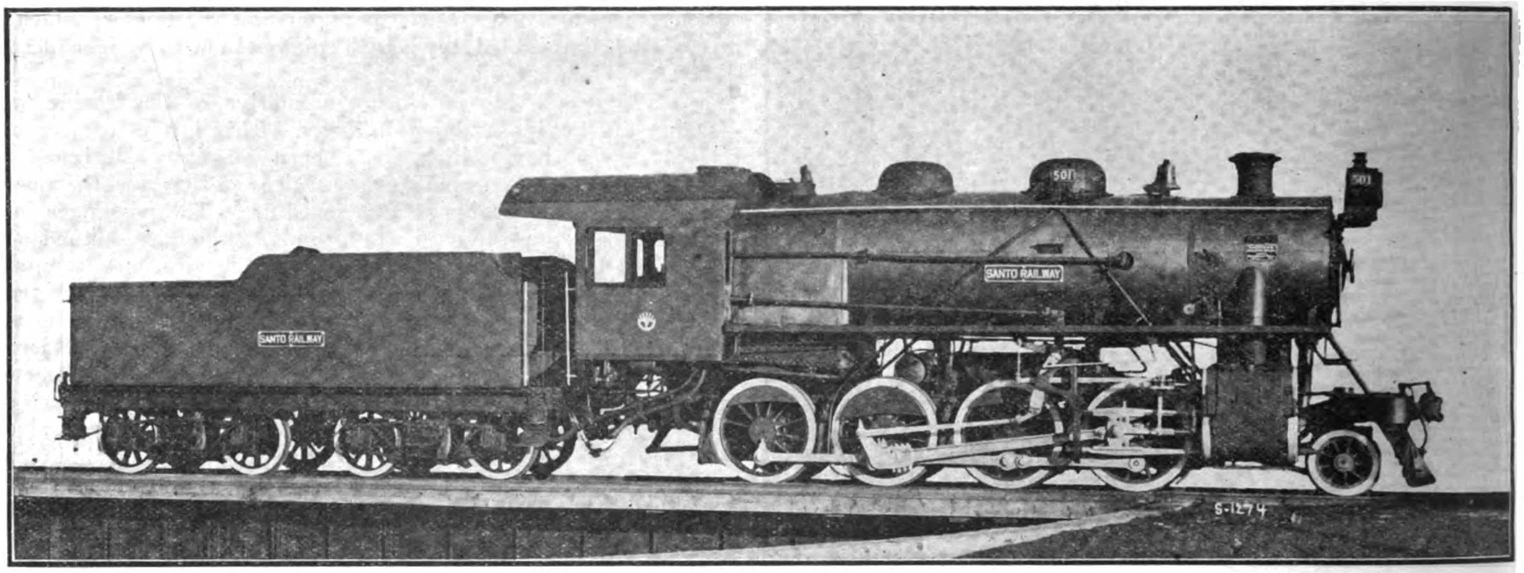
New Power for the Tientsin-Pukow Line

TRAVELLERS on the Tientsin-Pukow Railway will rejoice to hear that at last new locomotives are being purchased to develop the passenger, as well as the freight, traffic. On April 1 a contract was closed with the American Locomotive Company, of 30 Church Street, New York, for twelve Pacific type locomotives for passenger service. These are the largest and most powerful passenger engines in the Far East, and it is expected that they will be in service about October of the present year. If the authorities use these engines to their best capacity they will materially shorten the time of the journey between Peking and Shanghai.

On February 1 last a contract was closed by the same railway with the same company for twenty Mikado type freight locomotives, practically duplicating ten of the same type which were placed in service late in 1919.

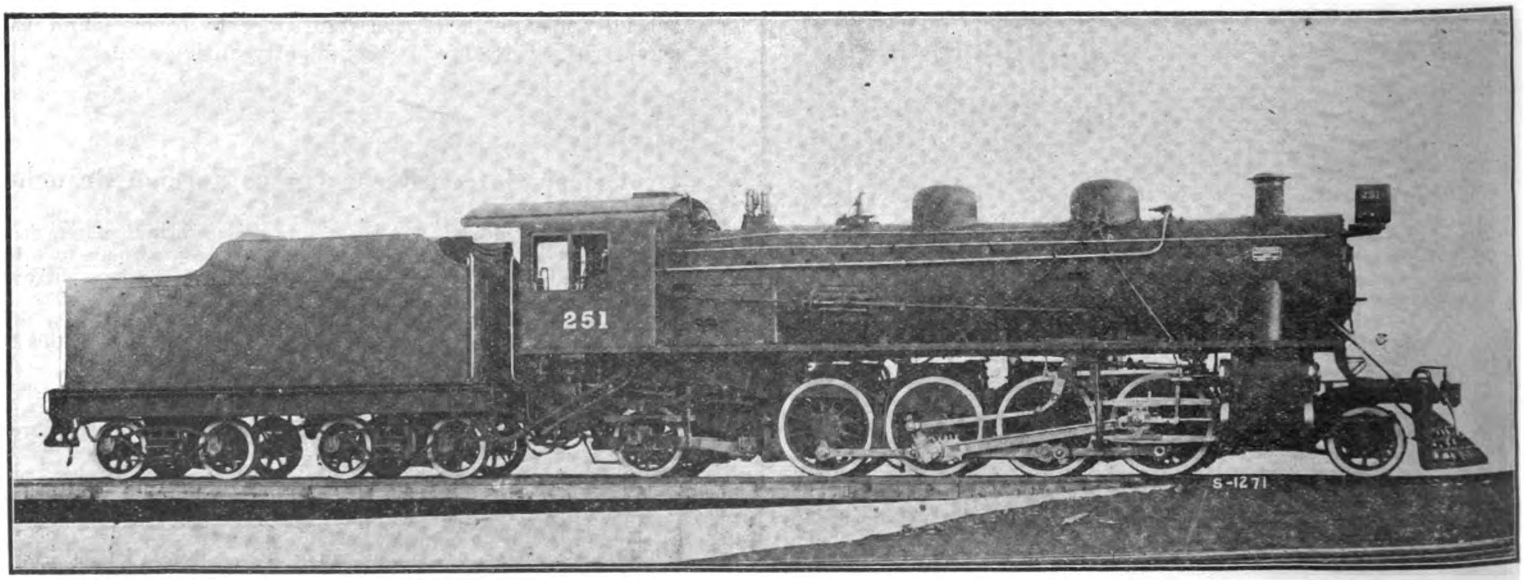
The first consignment of ten heavy and powerful consolidation locomotives for freight service, built by the American Locomotive Company for the Shantung Railway, has arrived in China. These engines are duplicates of fifteen others built for this road by the same company.

The Peking-Suiyuan Railway authorities are now having three Mallet and five Mikado type freight locomotives erected. These duplicate others of the same type built by the same company. These Mallet type engines are the most powerful locomotives in the Far East, and are used exclusively over the very heavy grades in the Nankou Pass, north of Peking.



LOCOMOTIVE BUILT FOR THE SHANTUNG RAILWAY

The weight of this locomotive in working order is 159,500-lb., with a tender of 104,700-lb. The maximum tractive power is 32,500-lb. The driving wheel diameter is 54 inches.



LOCOMOTIVE BUILT FOR THE TIENTSIN-PUKOW RAILWAY

The weight of this engine is 194,500-lb., with a tender of 124,300-lb. The driving wheel is 54 inches in diameter. The maximum tractive power is 35,300-lb.

America's Billion Dollar Silk Bill

The people of the United States are buying silk manufactures at the rate of over $1,000,000,000 a year. Never in the history of her silk industry have the manufacturers been compelled to pay as high prices for raw silk from abroad, yet they have brought into the United States in the year just ending more raw silk than in any preceding year.

Reeling Room of China Silk Filature, Showing Children Preparing the Cocoons by Boiling, Rough Brush in Smaller Girl's Hand Catches Fibers of Cocoons which are then Picked up and Drained in Perforated Pan

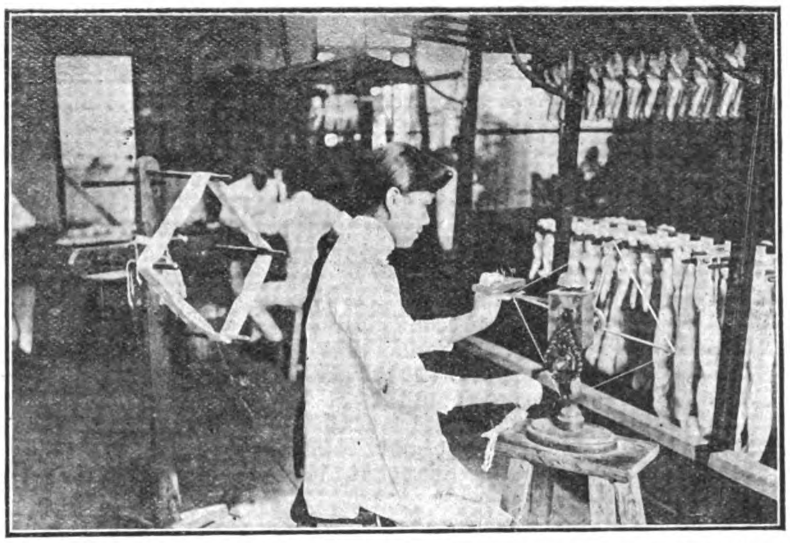
The value of the raw silk imported into the United States in the calendar year 1919 will, according to an estimate by the National City Bank of New York, probably exceed $300,000,000, against $180,000,000 in 1918, $156,000,000 in the fiscal year 1917, and $120,000,000 in the fiscal year 1916, the first fiscal year in which it crossed the $100,000,000 line. These figures, it is proper to add, relate to "raw silk as reeled from the cocoons" and do not include "waste silk" which will probably add about $12,000,000 to the grand total. The quantity imported, even at the phenomenally high prices, is greater than in any earlier year. The price of raw silk imported is the "highest ever," averaging $8.42 per pound in October as against an average of $3.09 per pound in the fiscal year 1915.

This high record of raw silk importation, and also at high record prices, says the bank's statement, probably means that the outturn of the silk factories of the United States in 1919 will approximate $750,000,000 in value at the factory, as against $250,000,000 in the last census year, 1914. A comparison of the official figures of raw silk imports entering the United States in the census year with the census record of value of silk manufactures turned out in those years shows that the value of the output of the factories in 1914 and 1909 was in each case about two and one-half times as much as the value of the raw silk imported. And with the present high price of labor and other requirements of the factory, it seems quite probable that the relation of raw silk used to the finished manufactures turned out will not differ radically from those of 1914 and 1909, and that, therefore, the manufacturers' valuation of the output of the silk factories of the United States in 1919 will be about two and one-half times as much as that of the raw silk imported, or about $750,000,000.

In addition to this, the imports of silk manufactures from other countries will aggregate nearly $50,000,000 though against this she exported nearly $25,000,000 worth of the products of her silk factories. Even adding a reasonable allowance for the advance which the consumer pays over the valuation at the factories, it seems quite apparent that the people of the United States are paying "across the counter" in 1919 an aggregate value of over $1,000,000 for the manufactured silks of all sorts which they are buying.

Where does this $300,000,000 worth of raw silk come from? Chiefly from Japan, China, and Italy. Japan alone has supplied in the 10 months ending with October $194,000,000 worth of raw silk out of the $251,000,000 worth imported in the 10 months ending with October; China $45,000,000 worth; Italy $11,000,000; while the total from all other countries is less than $1,000,000 value. These figures relating to raw silk as "reeled from the cocoon" and not the "waste silk" above referred to.

Where do the $25,000,000 worth of domestic silk manufactures go? Everywhere. Of silk dress goods alone, the exports in the calendar year 1918, the latest for which detailed figures are available, went to more than 50 different countries and colonies, even including the great silk manufacturing countries of Great Britain and France, with comparatively small quantities to Italy, Japan, and China; while of silk wearing apparel, the exports went to more than two-score countries. Canada was the largest purchaser of her silk dress goods with a total of nearly $7,487,000; Argentina $450,000; Mexico $353,000; Australia $313,000; Italy $236,000; Cuba $215,000; Great Britain $59,000 and France $30,000.



Sampling Reeled Silk in a China Filature—450 Yards are Reeled off on Machine Equipped with Revolution Counter

America's total exportation of silk manufactures made from silk brought from the opposite side of the globe amounted in a decade ago to less than $1,000,000, advancing to $2,000,000 in 1912, $5,250,000 in 1916, $7,250,000 in 1917, over $12,000,000 in the fiscal year 1918, and will, as above indicated, approximate $25,000,000 in the calendar year 1919. These figures of silk manufactures exported do not include those of artificial silk which will amount during the full calendar year 1919 to nearly $10,000,000.

Japanese in the Philippines

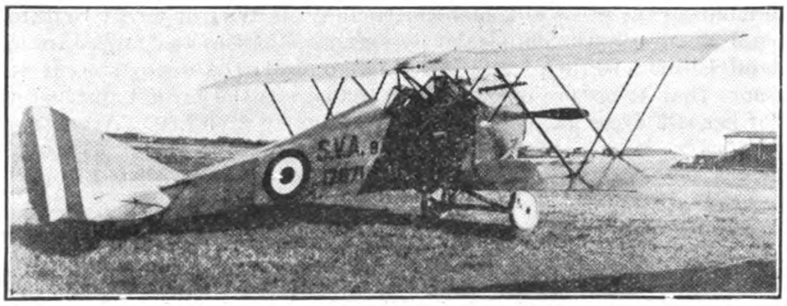
By a vote of 18 to two, and after the longest and most heated debate that has yet taken place on the floor of the Philippine Senate, in which the so-called "yellow peril," protection of lands for Philippine posterity, bribe and bad faith were invoked on one side and friendship, generosity, equity, justice and peace in the Orient on the other, the upper house of the Philippine Legislature recently passed a joint resolution which was introduced by the Senate Committee on Agriculture and Natural Resources authorizing certain Japanese corporations to complete the title to Philippine lands.

The enactment and passage of this measure was influenced by the wholesale Japanese migrations to the Island of Mindanao, but its presentation at the special sitting of the Senate was promoted by the Japanese *vs* Filipino controversy at Davao, where the Japanese have been active in purchasing lands in large quantities and applying for clear titles. Only the corporations stipulated in the resolution will be allowed to complete the titles on the lands, however, and those firms or individuals of Japanese origin holding lands without a clear title will have to retire in favor of the Filipinos.

The Rome-Tokyo Flight

Italian Airmen Arrive in China

As we go to press Shanghai is awaiting the arrival of Lieutenant Ferrarin, the pilot of the first of the Italian aeroplanes to fly the China coast on the great flight from Rome to Tokyo. He is accompanied by Mot Cappannini and is flying a S.V.A. machine.



An Italian S. V. A. Machine as used in the Rome-Tokyo flight

Lieutenant Ferrarin arrived at Canton from Hanoi on April 22, being preceded the day previously by Lieutenant Masiero. Both airmen, on April 28, designed to start on the Canton-Foochow leg of the flight together, with the object of arriving at Shanghai simultaneously, but on taking off Lieutenant Masiero s machine struck a tree and smashed, the airman and his assistant fortunately escaping unhurt.

Lieutenant Ferrarin continued on his way and landed at Foochow at 6.30 in the evening of the 28th, his flight being rendered difficult by the fog. After passing Amoy he was forced to descend to about 500 feet and fly at half speed.

His intention was to start next day for Shanghai but heavy fog prevailed on the coast and rendered a flight impossible. Receptions arranged in Shanghai, including a banquet, had to be postponed.

Distance of the Various Sections of the Flight

	Miles.
From Rome to Gioia del Colle	237
Gioia del Colle-Salonica	313
Salonica-Adalia	481
Adalia-Aleppo	375
Aleppo-Bagdad	469
Bagdad-Bassora	302
Bassora-Bender Abbas	574
Bender Abbas-Charbor	351
Charbor-Karachi	359
Karachi-Delhi	668
Delhi-Benares	402
Benares-Calcutta	414
Calcutta-Rangoon	643
Rangoon-Bangkok	348
Bangkok-Hanoi	643
Hanoi-Canton	508
Canton-Foochow	442
Foochow-Shanghai	375
Shanghai-Kiaochow	394
Kiaochow-Peking	348
Peking-Chefoo	339
Chefoo-Fusan	419
Fusan-Osaka	359
Osaka-Tokio	270
Total	10,033

Chinese National Industrial Exhibition in 1921

The Chinese Government has wired to all the provinces informing the officials and the Chambers of Commerce about the coming national industrial exhibition to be held in the Temple of Heaven next year so that native products can be despatched to the exhibition by Chinese producers in time for the exposition. Mr. Chu Chi-chien, ex-Minister of Home Affairs, will be appointed Chief Director of the proposed exhibition with two associate-directors, one of whom is Mr. Yeh Kung-cho, high industrial commissioner, while the other will either be recommended by the Ministry of Agriculture and Commerce or the post will be offered to Mr. Liang Chi-chao. Mr. J. C. Ho, Chief of the general affairs department of the office of the high industrial commissioner, has specially been entrusted by both His Excellency President Hsu and Mr. Yeh to make arrangements with all parties concerned so as to make the proposed industrial exhibition a success. Mr. Ho speaks English fluently so that foreigners generally approach him in matters concerning the exhibition. The plans of the Central Government are said to be complete in every respect and that the total expenses will probably amount to the neighborhood of three million dollars. Every sort of native product from every corner of the Chinese Republic will be exhibited and for the purpose of securing articles, special delegates with commercial, agricultural and industrial experiences will be despatched to Inner and Outer Mongolia shortly. With reference to Tibet and Chinese Turkestan, the Chinese officials in Kansu, Sinkiang and Szechuan have been ordered to collect products as soon as possible for exhibition purposes. Further, in order to make the proposed exposition a success in the true sense of the word, the Government will appoint all those officials who took part in the last Nanking National Exhibition and also the American St. Louis Exposition as counsellors or advisers while the services of some foreign experts will be utilized by the Chinese authorities because the coming exhibition bears great significance to the future development of the vast and unlimited natural resources of China.

Issue of $10,000,000 Chinese National Bonds Not Welcomed by Public

The recent issue by the Chinese Ministry of Communications of National Bonds for $10,000,000 is not welcomed in the market, says the "Peking Leader"; neither foreign banks nor the Chinese people appear to consider the purchase of such bonds as a good bargain. In consequence thereof, it is ascertained that the Ministry is proposing to have the whole amount pledged to a certain leading Japanese firm for a temporary loan of Yen 5,000,000. The conditions to be agreed to in the contract are unknown, and the way in which the proposed loan will be utilized is not made public.

Dr. Sun Yat-sen's Railway Scheme

Part III of Dr. Sun Yat-sen's scheme of railways and ports for South China is held over till next issue owing to pressure on our space.

The Chinese Government has received word from the Diplomatic Body to the effect that Tls. 4,000,000 will be released in Shanghai from the Customs Surplus. The Foreign Office, to which a portion of this amount will be allotted so as to meet its expenditures abroad, is being advised by the Ministry of Finance accordingly.

Engineering, Financial, Industrial and Commercial News

RAILWAYS

Survey Kalgan-Kiatkta Railway.—According to a Reute: despatch a survey party has been organized and intends to begin a survey of the Kalgan-Kiatkta railway, on May 1. It has also been stated, says the "China Advertiser," that Mr. Chen Hsi-ling, Assistant Director of the Peking-Suaiyuan railway, will be appointed Engineer-in-Chief of the Kalgan-Kiatkta railway, with Mr. Hsieh Hsueh-ying as Chief of the Survey Department.

South Manchuria Company: Projected Increase of Capital.—Mention has already been made of the failure of the South Manchuria Railway Company's scheme to secure the formal transfer to itself of the management of the Korean Railway as part of the Government's fresh investment in connection with its projected increase of capital, owing to the firm opposition shown by the Government-General of Korea, says the "Japan Advertiser." The company has since been considering other means of effecting the increase of capital, which is now imperative in view of the growing necessity of the extension of its activities. It is said that the company intends to raise Y.140,000,000 by distributing the new shares among the present shareholders and also offering part of them to the public. It is at present kept secret how the Government intends to make its new investment in the company, as the matter requires the revision of part of the present law, for which the approval of the Diet must be received. It is, however, rumored in certain quarters that the Government contemplates buying up the debentures of the company floated in England some time ago, which amount to Y.120,000,000 with a view to booking them as its investment. This is regarded as a substitute for the Korean Railway. This is only a rumor, and how the question will develop, time alone will show. It is at any rate expected that the company will succeed in getting the necessary funds for the long outstanding increase of capital. In this connection it may be noted that some changes have now been effected among important figures of the company. Whether this has anything to do with the present scheme is not known at present.

Lung-Hai Railway.—The people of Kansu and Shensi have addressed a joint telegram to the Central Government stating that they were surprised to learn that Director-General Shih of the Lung Hai Railway was sent to Europe to negotiate further loans for the construction of that line. It was originally fixed that the sum to be spent for the construction should be 250,000,000 francs; but since the 1st year of the Republic 120,000,000 francs has already been spent, while an additional loan of $5,000,000 was raised. It is estimated that the actual sum of money used in the construction is no more than £1,400,000. Under the various excuses, the Director-General has suspended the work of construction. He has all the time been negotiating for loans disregarding the protests of the people of the provinces. It is now requested that the Central Government will instruct him to proceed to his work of construction, and furnish details of accounts and an explanation for the necessity of another loan if there is any explanation available.—"Peking Daily News."

Extension of Tao-Ching Railway Granted.—It is understood that the application of the Peking Syndicate to extend the Taokow-Tsinghua Railway to Huaiking in Honan was granted by the Department of Communications.—"China Advertiser."

Chinchow-Jehol Railway.—A Chinese News Agency states that the Government has decided to construct a railway from Chinchow to Jehol in connection with the development of Hulutao Port. It is stated that Mr. Chow Chou-hsing, Director of Construction for the port, will also be director of the railway.

Ussuri Railway Grabs Cars.—Officials of the Chinese Eastern Railway reported recently that the Vladivostok railway junction was entirely congested, and that railway traffic was at a standstill owing to the impossibility of despatching coal to bring back the cars there belonging to the Chinese Eastern Railway. All appeals, so far, have been in vain, and the situation is going from bad to worse. The troops do not clear the cars, while the expeditionary armored trains prevent the cars from being otherwise removed. The Ussuri railway, which possessed only 3,000 cars, now has 6,400, and the number is daily increasing, and the congestion along the sidings and in the stations is ever growing. Besides the Ussuri railway now possesses some of the best cars of the Chinese Eastern Railway, and does not seem to be able to return these.

Korean Railway Project.—The "Seoul Press" reports that Mr. N. Sakaide, President of the South Chosen Railway Co., has lately been making a tour of South Korea on an inspection of routes for the railways projected by his company. The company is capitalised at ten million yen and is powerfully backed by the well known Suzuki Firm of Kobe. It plans to construct three railway, one connecting Masan with Kwangju via Chinju, another connecting Kwangju with Songchyongli, a station on the Honan Railway, and yet another connecting Kwangju with Chonju. The railways will all be of broad gauge. According to Mr. Sakaide, the construction of the projected line between Kwangju, and Songchyongli, seven miles, will first be undertaken at the cost of one million yen. The purchase of land needed for the line will be begun about May and when this is finished, construction work will at once be taken up. Mr. S. Sakaide hopes to open the line to traffic in spring next year.

Japan "Four-Tracking" Line.—The Imperial Government Railway Bureau has decided to construct another double track parallel to the Tokaido line. The work will be started this year, and will be completed in seven years. The new line will be constructed in order to facilitate the transportation of freight, which is daily increasing in volume. The expenditure will not be very great, it is stated, because there is ample room on the present railway right of way to lay the new lines without necessitating any special preliminary work. When the new line is completed, it will be set apart for the conveyance of freight, and the present line will be used for passenger traffic.

Loan for the Lung-Hai Railway.—It is reported that Mr. Sze Shu-Tsen, Managing Director of the Lung-Hai Railway, who is at present in Belgium, has succeeded in negotiating a loan of Francs 25,000,000, to continue construction work. It is said that the interest is 8 per cent. per annum. As soon as Mr. Sze returns to China the construction of the sections between Hsuchow and Haichow and between Kuanyintang and Tungkuang will at once be started. After the completion of these two sections more loans will be concluded. The railway line of these sections will be made security for the loan.

Shanghai Tramways.—Following is the Traffic Return of the Shanghai Tramways (Foreign Settlement) for March, 1920, and for 3 months ended 31st March, 1920, with figures for the corresponding periods last year :—

	March, 1920.
Gross Receipts	$196,444.86
Loss by currency depreciation ...	50,800.80
Effective Receipts	Mex.$145,644.06
	March, 1919.
Gross Receipts	$164,928.56
Loss by currency depreciation ...	41,081.48
	Mex.$123,847.03
	March, 1920.
Percentage of loss by currency depreciation	27.17
Car Miles run	404,622
Passengers Carried	8,783,760
	March, 1919.
Percentage of loss by currency depreciation	26.12
Car Miles run	360,570
Passengers Carried	7,495,228
	3 Months ended 31st March, 1920.
Gross Receipts	$555,978.96
Loss by currency depreciation ...	140,647.07
Effective Receipts	Mex. $415,331.89
	3 Months ended 31st March, 1919.
Gross Receipts	$463,945.08
Loss by currency depreciation ...	112,030.64
Effective Receipts	Mex.$351,914.44
	3 months ended March, 1920.
Percentage of loss by currency depreciation	26.63
Car Miles run	1,163,825
Passengers Carried	24,782.507
	3 months ended March, 1919.
Percentage of loss by currency depreciation	25.38
Car Miles run	1,038,425
Passengers Carried	20,977,704

Russians Sieze Cars.—Further light on Trans-Siberian Railway conditions is shed by the former Japanese Consul at Irkutsk, who returned recently from Siberia. He says the population of Irkutsk has been increased 30 times compared with pre war times, the number of people reaching 300,000 and at Omsk, the number of inhabitants, which was between 70 and 80,000 before, now is said to amount to 600,000. Houses being wanting, the majority of people are living in goods and passenger cars. To-day, many locomotives are found in a round house their boilers frozen stiff. Coal is very scarce. Cargo shipped from the mines is found reduced to one-tenth of the original shipment, when the consignment reaches the destination, those living in cars helping themselves to the cargo as it is transported.

Manila Railroad.—Among the first measures passed by the Fifth Philippine Legislature at the First Session on February 25 was one authorizing the Governor-General to buy, on behalf of the Government, sixty thousand six hundred and thirty-five shares of the capital stock of the Manila Railroad Company of the Philippine Islands, of the par value of twelve million one hundred and twenty-seven thousand pesos, to be paid for at the time of the execution of the subscription contract, as follows: The sum of one million pesos in cash and eleven million one hundred and twenty-seven thousand pesos applied to the present indebtedness of the Manila Railroad Company of the Philippine Islands as successor of The Manila Railroad Company. This sum goes to the general funds of the Government of the Philippine Islands for loans to the corporation last named.

To Represent China.—An order issued by the Ministry of Communications instructs Mr. Foley and Mr. Hsueh Hsi to participate in the forthcoming railway traffic conference at Tokio.

Mingshui-Changchiu Light Railway.—Mention was made some time ago that local Chinese in Shantung were discussing the construction of a light railway between Mingshui and Changchiu for the purpose of facilitating coal transportation. We now learn that the work has already been started on the line, hundreds of coolies being employed for the building of the road bed and embankment.—"China Advertiser."

Amoy-Changchow Railway.—An interesting situation has developed with regard to the proposed railway between Amoy and Changchow. Originally it was decided that the thirty million dollar industrial domestic loan should be utilised for the construction of this line, but when the proclamation of the loan was made it contained no reference to the railway. Since then it has been decided by the Ministry of Communications to inaugurate a bureau to carry out the construction of the railway, and it is probable that a loan to cover the expenditure will be floated. One great difficulty in the way of proceeding with the undertaking is the fact that a portion of Changchow is occupied by Southern troops.

Subways for Tokyo.—Tokyo is promised a subway rapid transit service within the next six or seven years, if the plans that have been framed by three promoting companies come to fruition. The Government has granted charters to the Tokyo Railway Company, the Tokyo Rapid Transit Company and the Musashi Electric Company to construct "tubes" in the city. An expert is expected to arrive in Japan shortly to advise and generally supervise the construction. This man, it is said, has had a long experience with the London "tubes." When the scheme of constructing subway lines in Tokyo was first mooted, the Government encouraged the project, but stipulated that the different companies in the new enterprise should combine and make one big undertaking of the scheme. This was not agreed to and for some time the Government withheld the necessary permission, but a few days ago granted the charters applied for.

The Tokyo Railway Company proposes the construction of three lines, 20.6 miles in length. The first of these will be from Meguro to Oshiage through Tsukiji; the second from Igebukuro to Susaki, through Takatanobaba, Iidabashi and Otemachi; while the third will be from Sugamo to Manseibashi. The total cost is estimated at Yen 92,000,000. It is hoped that work will be commenced this year and it is hoped to have all the lines running by 1927. The Tokyo Rapid Transit Company proposes constructing a subway from Shinjuku to Otsuya via Hibiya and Mansebashi. The distance is small being a little over 4 miles, but according to the present system of travelling, where one has to wait for the street car and then transfer twice or thrice, from 40 minutes to one hour is required to do the distance. The company proposes to do the distance in less than 10 minutes.

The Musashi Electric Company promises to construct a line from Meguro to Hibiya traversing the western outskirts of the capital. The route will be five miles in length and is estimated to cost about Yen 20,000,000.

The great saving of time that will result when these schemes reach fruition and the subways are in good working condition may be judged by the claim of the promoters of the subway schemes that the distance between Shinagawa and Asakusa will be done in 13 minutes in a "tube." At present to go from the Ginza to Asakusa, it takes well over an hour. "A great benefit that will result from this scheme," said one of the floaters of the new companies to the "Japan Advertiser," "is that it will greatly relieve the congested state of travelling in Tokyo and the outskirts. At the present rate of over-crowding and deterioration of the rolling stock and tram tracks, the entire transportation system of Tokyo, by street car, will be as good as tied up in three years. The street cars will continue to run even when the 'tubes' are in full working order, but they will be as different from the present cars as we hope to make the 'tubes' different from the narrow crowded boxes that now do service for the travelling public of Tokyo."

That the successful termination of the subway scheme may be the beginning of an "underground" world in Tokyo was another of the hopes entertained by the promoters. "Erection of skyscrapers will not be a successful project. The Japanese do not seem to care for that, and all said and done, it is a question whether tall buildings are ornate. I rather think that they tend to mar the beauty of a city, though they may be impressive. After we have burrowed into the ground and Tokyo is enabled to travel more comfortably and quicker, I hope to see others following in our wake too. It is not such an impossible project to put many of our smaller factories underground. That will relieve the housing situation considerably, and the ugly sights that are to be seen of little workshops dotting the city in irregular confusion everywhere, will, I hope, go 'down below.'"

It is proposed to run the 'tubes' at a uniform speed of about 16 miles per hour. The trains will be available from 5 a.m. until midnight, and the charges will be 2 sen 5 rin per mile. Although the companies that have projected the subway scheme will not combine, it is understood that when the lines are all completed, they will amalgamate into one joint company which will probably be semi-officially run, the Government subsidizing the service partially. At places where subterranean excavation is inadvisable, the track will be elevated.

Horvath Advisor to China.—General Horvath, until recently in control of the Chinese Eastern Railway at Harbin, has been appointed by the Chinese Government as advisor in connection with the affairs of the railway at a salary of $3,000 per month. General Horvath will remain in Peking.

Chinese Eastern Directorship.—Mr. Wang Ching-chuan has been appointed Associate Director to the Russian Resident Director of the Chinese Eastern Railway in succession of General Horvath, and Mr. Yu Jen-feng is to assist Mr. Wang. Many technical experts are also appointed to attend to the various duties of the departments of the line.

The "Yi Shih Pao" says that Mr. Pimenoff, the new Russian Director of the Chinese Eastern Railway has suggested to General Pao Kweiching that the Railway Administration should demand payment for the transportation of Allied and Associated troops, and that the following amounts are owing: American $250,000, Japan $1,690,000, Britain $100,800, Italy $7,000, China $144,793, and enemy countries on account of prisoners of war $360,000.

The Chinese have now organized a Chinese force for policing the Chinese Eastern Railway under the chief command of General Chang Huanhsiang at Harbin (nephew of high inspecting commissioner Chang Tso-lin of Manchuria). The Chinese railway police are armed with rifles manufactured by the government arsenals at Hanyang and Tehchow. The whole line is divided into six sections as far as the Manchuli station each of which is under the control of a sectional chief or Tuan-chang. All the Chinese experts who have been selected from among the employees of the Peking-Hankow and the Peking-Mukden railways have now been given various posts by General Pao.

ROADS

Big Street Programmes in Japan.—Tokyo proposes to spend some Yen 38,000,000 on improving the streets during the next ten years. The "Tarvia" interests of America are preparing to lay experimental sections for test purposes. Kyoto, Kobe, Osaka and other cities will follow suit and the improvements will involve the expenditure of many millions. The new highway to be built between Tokyo and Yokohama will be paved and will be from 60 to 75ft. wide. Osaka, as previously mentioned, is contemplating spending Yen 200,000,000 in improving the city, and a new highway will connect with Kobe. To handle the many paving contracts which are contemplated and already let, a new company has been organized by leading business men of Tokyo and Osaka, says the "Japan Advertiser." The company known as the Nippon Shigai Kensetu Kaisha, has a capital of Y6,000,000 and will have its headquarters in Tokyo. One of the organizations responsible for the proposed improvements, not only in Tokyo but throughout the principal cities of Japan, is the Civic Improvement Association of which Baron Goto is the head. Baron Goto has been in America and given the subject of civic improvement and betterment much study. At the meetings of the organization, lantern slides showing the ideal streets of America and other countries have been displayed, and an intense propaganda has been carried on for civic improvements in Japan.

SHIPPING

"Ukishima Maru" Missing.—The s.s. *Ukishima Maru* (1,249 tons), which was sold to a British firm by the Imperial Steamship Co. of Kobe to be delivered at London, left Moji on February 24. She went to Keelung to ship coal and then proceeded to Singapore, but since then nothing has been heard of her. It is feared that she was wrecked. As she was loaded with sugar at Moji, the loss will amount to a large sum, the ship alone being worth one million yen.

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Storage batteries and dry cells
Bare and insulated wire and cable
Telephones, switchboards, bells and accessories
Meters, instruments, line hardware and tools
X-Ray and medical equipment
Lamps, fans, wiring devices, fixtures and glassware
Domestic appliances for heating, cooking, etc.
Electric commercial and pleasure vehicles

Mechanical Supplies

Machine shop equipment
Mechanical transmission equipment
Pumps, meters, instruments and gauges
Stationary and marine oil engines
Pipe and pipe fittings
Belting, packing and asbestos mechanical goods
Flour, rice and oil mill machinery
Compressors and drilling equipments; blasting materials
Surveying, drafting and assaying instruments and supplies
Scales, vaults, tractors, trucks and road-making materials

Railway Supplies

Locomotives
Freight and Passenger Cars
Bridges and Turntables
Rails, Couplers, Crossings and Switches
Railway Specialties and Stores

Building Supplies

Roofing, glass and hardware
Sherwin-Williams paints and varnishes
Red and white lead
Concrete reinforcing bars and triangle mesh
Plumbing, heating and wiring devices

GENERAL IMPORTERS AND EXPORTERS

Hongkong Shipyard Employes' Strike.—The Chinese employes in the engineering trades have demanded an increase of forty per cent. in their wages. The Hongkong & Whampoa Dock Company, and the Taikoo Docks conceded, as from April 1, an additional 9½ cents per hour, with a consequent addition of 2¼ cents per hour on overtime at pay and halfpay, and 3 cents per hour for overtime at double pay. This concession apparently has not satisfied the fitters and turners in the shipyards, who have not turned up to duty. It is feared that a sympathetic movement will affect other industrial establishments.

Japan's Shipowners Worried.—The improvement in the shipping market of Japan, which was looked for at the beginning of April, has not materialized and the market, if anything, is weaker than ever. Several large ocean-going vessels have been diverted to the near-seas trade because of the failure to obtain cargo for them on the ocean routes.

The extra freight space offered by the U.S. Shipping Board steamers built in Japan continues to be one of the principal causes for the depression in the Pacific trade. This supply of tonnage will continue until the latter part of May. Another reason of the falling off in the market is the unusual activity of the American shipping concerns in their quest for Oriental trade. These companies have entered the far eastern circle on a large scale and, with characteristic American aggressiveness have made a strong bid for the carrying trade between Oriental ports and the Pacific ports of the United States.

During August, September and October of last year there was an unwonted activity on the European market, but recently, owing to labor troubles and the adverse condition of the exchange, cargo for European points has become very scarce. Even the N.Y.K. and the O.S.K. concerns that maintain regular service to European ports, find it difficult to gather sufficient freight to make the service pay.

Spasmodic shipments of wool and wheat from Australia, steel from America and a few other staple products are about the only bright features of the ocean carrying market. Otherwise the outlook is gloomy and there is no immediate prospect of improvement.

Before the end of March fifteen ships totalling 103,000 tons were disengaged. In April there were 31 more vessels without charter engagements and the disposal of these ships is the cause of much speculation and worry in shipping circles.—"Japan Advertiser."

Japan's Floating Exposition.—The International Exhibition Company, floated in Tokio last December to introduce Japan's national industries to all the world and to promote her commercial interests abroad, plans a "floating exhibition" next month. A vessel of 11,900 tons is now in course of construction at the Kawaski dockyard, and on this will be laden handicrafts peculiar to and constructed in Japan. She is to be named the *Kifuken Maru*, or the Ship of Good Fortune, and will cruise in all parts of the world for 10 or 11 months, touching at important trading ports and holding exhibitions at each of the stoppings. The principal exhibits will be raw silk and silk textiles, marine and agriculture products and works of art in lacquered ware and bronze. A cinematograph apparatus will be installed and through the medium of the screen Japanese customs and manners will be introduced. There will be representatives of exhibitors on board, and several medical commissions will also be represented, the latter taking this opportunity to investigate sanitary, industrial and political developments in other parts of the world.

Round the World Line.—The sailing of the *West Casson*, of the Pacific Mail Steamship Company, from New York marked the opening of a round the world services by a United States shipping company. The *West Casson* sailed for Kobe, Yokohama and Calcutta and will return home by way of the Mediterranean and the Atlantic. The Shipping Board is at the present time building four passenger vessels, which when completed will be allocated to the Pacific Mail Steamship Company for its service between San Francisco and Japan.

New Chinese Venture.—A new Chinese shipping company, having as its object the maintenance of a service between China and South America viâ Panama will be shortly established, according to information from the Japanese Consul at Panama.

This shipping company is being promoted by the Chinese merchants in Peru and Chile. The "Chunghua Steamship Company" is the name of the new concern. The promoters have completed all the official procedure necessary for the establishment of the company.

A representative of the new company is now on his way to China viâ America. In this country he will arrange to buy three steamers of from 5,000 to 10,000 tons for his company.

Many Ships; Little Cargo.—The Osaka Shosen Kaisha steamer *Andes Maru*, which recently arrived at Yokohama from Kobe, en route to Europe, had but 1,200 tons of cargo, principally bean-oil, starch and tinned provisions. She will take about 1,000 tons more at Yokohama and get the balance of her cargo at ports in China and India. The Nippon Yusen Kaisha and the Osaka Shosen Kaisha are experiencing much difficulty in securing cargoes for Europe and the offerings are rapidly decreasing, despite the fact that there is a keen demand for foodstuffs in all European countries. These companies are forced to depend upon cargoes from China and India and are finding the maintenance of the European lines unprofitable.

SHIPBUILDING

Motor Boats in China. — According to an American Consular Report, motor boats are gaining in popularity among the Chinese, and the time seems not far distant when they will be in far more general use for business and pleasure. It is reported that at least 50 boats are being constructed in the various yards at Canton, and that there is a demand for motor-boat engines developing from 15 to 35 horsepower. While American engines are popular, manufacturers should take into consideration that the Chinese give great weight to the price, rather than basing their purchases solely on quality, especially as European manufacturers undoubtedly will take advantage of this fact in their efforts to capture this growing market.

BUILDINGS

Tsining Settlement.—The establishment of a foreign settlement at Tsining, which was strongly advocated by Brigadier-General Chin Yun-é, younger brother of Premier Chin, and Mr. Pan Fu, Vice-Minister of Finance, will be carried out in accordance with a plan drawn up by a French engineer. The area allotted will embrace a piece of land 20 by 10 *li* and the cost of construction will reach $800,000.

Japan's Housing Problem.—The scheme of the municipal authorities of Yokohama to provide additional houses for those who are in straightened circumstances has proved such a success that preparations are already under way to construct 2,400 similar dwellings at a cost of Y.600,000. This amount has been subscribed by wealthy business men and other residents of the city.

The first group of city-built homes consisting of 74 dwellings, a public bath house and grocery store, erected at Minamiota, a suburb of Yokohama, has already been completed and every cottage occupied. Minamiota was selected, because of sanitary and climatic advantages. A large play-ground for children is also situated in the new settlement. The 74 dwellings cost approximately Y.100,000, including the cost of the land. Each cottage has three rooms and the rent charged is Y.7.50 to Y.8, according to the location.

The sites for the new houses have been selected at Nakamura-cho and at Kanagawa, and construction work will begin very shortly. All will be completed within the year. There will be 200 houses at each place in addition to a bath house, grocery store, barber shop and an institution for the care of children while their parents are at work. The new houses which are to be erected at Nakamura-cho and Kanagawa are to be somewhat larger than those at Minamiota and a higher rent will be charged, ranging from Tls. 8.50 to Y.15 per month. There are applicants now for more houses than will be built during the year.

INDUSTRIAL

Cotton Mill Expands.—The Fuji Spinning Company has decided to double the company's capital to Y.38,000,000 by issuing 400,000 new shares to the company's original shareholders and 40,000 to the company's employes and officials. The matter will be submitted to a meeting of the shareholders who will be allowed one new share for every one of old shares and may use the company's accumulated reserve wherewith to pay for the new shares.

Insurance in Japan.—The Life Assurance Companies' Association reports that life insurance offices in Japan issued 105,465 new policies during February, their total value being Y.102,713,615. At the end of the month the net amount of the valid policies issued was 3,328,339 covering Y.2,222,129,867. The receipt of premiums by life assurance offices during the month was Y.19,-298,223.

Needles and Nails His Goal.—Lack of wire drawing machinery and a cheap source of material for drawing once caused a needle factory planned by Chang Chi-tung at Hankow to close down almost before it started. The machinery is still gathering rust, yet another try at this industry is contemplated, says the "China Advertiser," which states that a certain native of Kiangsi is contemplating establishing a factory to manufacture nails and needles at Shanghai. Mr. Li, the promotor, is said to be a graduate of a Japanese industrial school. He succeeded in interesting a number of Chinese capitalists in the scheme and in inducing them to finance him in the work of turning out these two articles, which are entirely supplied by foreign countries. Negotiations are proceeding for the purchase of suitable land. The scheme is by no means a novel one, however, as it was once taken up by the late Viceroy Chang Chih-tung, but had to be dropped owing to the lack of the necessary capital. [Not capital but raw materials.—Ed.]

WELL established and widely connected banking correspondents in all the market centers of the Far East provide for Irving customers reliable and responsive sources of information and service facilities for carrying out banking and commercial operations in every country of the Orient.

IRVING
NATIONAL BANK

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Commercial Bank
National and Inter-National

To Develop Railway Zone.—Mr. Yeh Kung-chao, who was recently appointed High Industrial Commissioner, soon will start for Harbin, accompanied by his staff, to investigate the sugar, oil and other industries along the Chinese Eastern Railway with a view to the encouragement of trade between China and Russia. Mr. Yeh considers that the development of native industries and products in Manchuria has an important bearing uopn commercial relations between China and Russia.

Shensi Spinning Mill.—The Chin-Hua Spinning Mill to be established under the promotion of Tuchun Yen of Shensi, capitalized at one and a half million dollars at Yutzu, Shansi, is now organized and subscriptions for shares are being invited. In this connection it may be interesting to mention that the Shansi authorities purchased cotton seed from America and Korea to the extent of 55 tons. When the shipment arrives, the seeds will be distributed among cotton planters, so that the crop can be improved.

To Amalgamate Silk Filatures.—A project for the amalgamation and systematization of all silk filatures owned and managed by individual reelers in Aichi prefecture, Japan, is being made by people interested in the silk industry in Nagoya and other districts in that prefecture. According to their announcement the project consists in organizing a joint stock company called the Chu Seishi Kaisha or Central Silk Filature Company, capitalized at Tls. 20,000,000. The company will take over 31 silk filatures in the prefecture either paying for them in cash or in the company's shares. In the investment market, according to the project of the promoters, 20,000 of the total number of 400,000 shares which represent the company's capital will be sold at premium.

To Mill Yangtze's Wheat.—The Manchurian Flour Milling Company intends erecting another mill at Shanghai in view of the plentiful supply of wheat along the river Yangtze. This new project is, however, not to be managed by the company itself, but will be placed in the hands of a new joint stock company capitalized at Y.3,000,000, called the Shanghai Flour Mill Company. The Manchurian Flour Milling Company will own the best part of the shares in the new company and sell only 5,000 in the market toward the close of this month.

New Cotton Mill for Tientsin.—The Dai Nippon Spinning Company has decided to erect another cotton mill in China following the completion of the mills the company is now building at Tsingtao and Shanghai. The new additional mill will be built at Tientsin, and will employ from 20,000 to 30,000 spindles.

Flour Millers New Plan.—The Toa or Oriental Flour Manufacturing Company has decided to increase the company's capital by Y.2,750,000 in the middle of July this year. The plan is to float a new company capitalised at Y.2,750,000 and later on amalgamate it with the old company.

Investigating Hide Trade.—Liang Shih-yi has been made chairman of a commission charged with making investigations regarding hides and furs and wool in order that the trade in these commodities may be improved. At the same time Chiang Tien-to, vice-minister of Agriculture and Commerce, has been appointed to preside over a commission to investigate the trade in cereals and ascertain how it also can be improved.

Shanghai Leather Factory in Trouble.—The Lung-Hua Leather Factory, which was bought out by Japanese, is in trouble, states the "China Advertiser," a Japanese weekly of Tientsin. It is said that the factory is indebted to the War Office to the extent of some $100,000. According to a native paper, during the 1st Year of the Republic the Military Department gave an order to the factory for 100,000 pairs of military shoes, the factory receiving the price in full in advance. But when 2,800 pairs were delivered, the order was cancelled the Military Department finding no further use for the shoes, and the factory was obliged to dispose of the remnant to other people at a considerable loss. The factory now pleads to the Department for an extension of time for payment of the debt.

AVIATION

Attempted Flight to Tientsin.—On Friday, April 23, Captain Mackenzie together with Mr. Wei, of the Chinese Aviation Department, attempted to fly on an "Avro" machine from Peking to Tientsin and were forced to land about 30 miles from Tientsin on account of engine troubles. In 1913 the first successful air trip from Peking to Tientsin was accomplished by a French aviator on a Caudron biplane, said flight being performed in 1 hour 18 minutes.

Large Shipment of Aeroplanes for S. China.—Only the other day there arrived in Hongkong the largest shipment of aircraft ever exported from the United States. The shipment, valued at half a million dollars gold, was consigned to Mr. C. E. W. Ricou of Hongkong and Macao. It was unloaded from the decks of the s.s. *Dacre Castle* at the Kowloon wharves and thence was transhipped by lighters to Macao to form the nucleus of a commercial aviation service to link by the swiftest, surest, safest, and most modern method the cities of Macao, Hongkong, Canton and Shanghai. Eventually it is the intention to include Manila, Haiphong and Saigon in the itinerary as well as some of the intermediate China coast ports *en route* to Shanghai. The unloading of the *Dacre Castle* cargo was itself a spectacle, the hugh cases, some 144 in number, containing:—Five Curtiss H-16 flying boats; two Curtiss HS-2 flying boats with wireless equipment; three aeromarine 39-B pontoon airplanes; one Boeing seaplane; eleven flying machines in all—and accompanying them were hanger and motor shop machinery and tools, track layer type tractor for pulling aircraft on trucks out of the water and about the hanger yard, handling trucks for all Curtiss machines, enough aerofoils to completely refit the Curtiss and aeromarine, enormous quantities of wire, spark plugs, dope, glue fabrics, instruments, etc., one hundred propellers and ten extra motors complete.

The H-16 and the HS2L types of flying boats are important seaplanes developed for the American Navy during the great war. The former has a wing span of 96-ft. and is powered by two Liberty motors: the latter is 74-ft. from tip to tip and employs a single Liberty 400 h.p. engine.

The capacity of these seaplanes for commercial carrying will be considerable. The H-16 has a carrying capacity, exclusive of fuel for 675 miles at economical speed, of ten persons. The HS2L, with fuel for over 500 miles, can carry a load equal to five persons. Merchandise can, of course, be substituted for passengers.

Shanghai Chengtu Air Line.—Plans are now under way to establish a passenger and mail air service between Shanghai and Chengtu, Szechuan merchants and an American returned aeronautical engineer. Although difficulties are predicted, the promoters are pushing the scheme. It is understood that $500,000 has been raised. Eight machines will be purchased from America.

The stations will be Shanghai, Hankow, Ichang, Chungking and Chengtu. The pilots and engineers, according to the plans of the company, will be Chinese. The promoters will raise all the necessary funds and no outside or foreign capital will be solicited.

Australian Defence Urged.— Sir Arthur Brown, the pioneer of the trans-Atlantic flight, urges the necessity of developing aviation in Australia as a commercial enterprise. He says it would contribute to the wealth and welfare of the Empire and back up the defence force. "You must have a fighting force. I will not mention the nation with whom you all expect to have war, he said recently, but I know you have one in mind. I think such a struggle may be closer than you imagine. Therefore you see the importance of developing and perfecting an air line in the scheme of defence."

LABOR

Japan's Labor Worries.—At the first session of the Industrial Affairs Investigation Committee, Premier Hara said that the war created many industrial problems for Japan, which are still awaiting solution. Japan, he said, is still in her own environment, and, conditions in Japan being different from those of Western Europe, the solution of Japan's industrial problems cannot be carried out along the lines followed by Western nations. The solution of those problems will necessitate alterations in laws and institutions, and a committee has been appointed to study the new developments in the industrial situation and to advise the Government as to the best course to pursue.

The committee got to work as soon as the Premier had finished speaking, and the first bill referred to it by the Government—the Trades Union Law—was, after a brief study, referred to a special committee nominated by the chairman.

HARBORS

Delay New Ch'ing Ho Port.—According to a "China Press" Correspondent at Lanhsien, Chihli, the project for the opening up of an all year round port at the mouth of the Ch'ing Ho is being held up in the Chihli legislature by the Japanese, no doubt because they have no share in the proposed undertaking. It was reported that a capital of $40,000,000 was being subscribed for the necessary work at the mouth of the river and the building of the railway line that would connect the port with the Peking-Mukden Railway at Changli.

Harbor Construction at Lienshanwan.—Mr. Chow Chao-hsiang, Superintendent of the Harbor Construction Work at Hulutao, is now at Mukden, having returned from his visit to Dairen, and conferring with General Chang Tso-lin concerning the ways and means of carrying the scheme into effect. It is said that Mr. Chow proposed to Gen. Chang to detail engineers to Dairen, Yingkow and Chinwangtao to study conditions at those ports before work is taken up at Hulutao. As the proposal was approved by Gen. Chang, competent engineers will be commissioned before long to inspect the three ports.

ELECTRICAL ENTERPRISES

Swatow Electric Plants. — There are four electric light plants in the Swatow district, the one at Chaochowfu having commenced operation in the latter part of the year. The Swatow Kaiming Electric Light Co. had another profitable year and declared its usual dividend of 8 per cent. in addition to adding a good sum to its surplus. During the year the number of lights supplied rose from 15.000 to 19,200, due chiefly to installations in gambling houses. Four of the five dyamos are in use every night. The Hing-ning and Kaying plants have a capacity of between 2,000 and 3,000 lamps, while that of the Chaochowfu plant is five thousand 20-watt lamps.

A number of American light plants have been sold in this district during the year, most of which are being operated on a commercial basis at a charge of 64 to 96 cents per lamp. Their small cost especially appeals to the Chinese, with whom electric lighting has become very popular, and during the next few years considerable development along this line should occur.—U.S. Consular Report.

Installation at Lipa, P.I.—A new provincial electric company, "Electra Lipena, Incorporated," has recently been incorporated under the laws of the Philippine Islands, and will start the installation and operation of an electric light, heat and power plant in the city of Lipa, the largest city in the province of Batangas. The company is incorporated with an authorized capital of P.250,000, of which P.125,000 is subscribed and P.100,000 paid. Lipa is a first class municipality of over 50,000 inhabitants, and is the home of many distinguished and progressive Filipinos. This move on the part of the Lipa residents is expected to father a general formation of power companies in the municipalities not already equipped.

TELEPHONES AND TELEGRAPHS

Peking-Nanking-Wuhu Long Distance Line.—The Chinese Ministry of Communications is convinced of the absolute necessity of establishing a long distance telephone service between Peking, Nanking and Wuhu. Such a service has a direct bearing upon the commercial developments of the country in general and the military facilities of the Northern Province in particular, says the "Peking Leader." The prospective scheme was discussed some time ago, but on account of the lack of appropriate funds to operate such a huge undertaking, the question, however needful it may have been, had to be held over for future consideration. The Ministry of Communications considers it advisable to discuss the question again. Mr. Wang, a member of the Ministry, has been deputed to consult with the Telephone Authorities in Nanking, which city the Ministry has the intention of transforming into a switching station, linking up the two lines running to Wuhu in one direction and to Peking in the other. The necessary machinery and plants will be obtained from the States. Instructions have also been issued by the Ministry to the Departments of Stores Transportation that proper quarters should without delay be erected in order to receive the various plant and machinery when it arrives. By this means, the Government desires to centralise its efforts on Nanking, which will on the completion of the project connect up the three provinces of Kiangsu, Chekiang and Anhui.

Two Sen Phone Rate.—Two sen or one U.S. cent a call is the astounding announcement from Japan and even such a ridiculously low charge (compared with U.S. telephone tolls) is expected to return a huge income. Therefore, a system of calculating telephone charges according to the number of calls made will be put into effect for the six largest cities of Japan—Tokyo, Osaka, Kyoto, Kobe, Yokohama and Nagoya by the Department of Communications next month. Officials of the department say this system, while augmenting the income from telephone service, will not mean additional expense for the ordinary telephone user.

The ordinary rate will be 2 sen a call. This will be in addition to annual charges for each phone, amounting to Yen 40 for Tokyo, Yen 35 for Osaka and Yen 30 for Yokohama, Nagoya, Kyoto and Kobe. The present annual charge for Tokyo is Yen 66.

There are 5,500 telephone subscribers in Tokyo and official figures show that these average 20 calls a day.

Newspapers will be given a special rate of 1 sen a call. Tally of the number of calls made over each phone is to be kept by an automatic calculator to be installed in the exchanges. The number of automatic phones in Tokyo will be increased shortly, it is annnounced. There will be no increase in charges, but the limit for a conversation will be reduced from five minutes to three. There are now 250 of these telephones in Tokyo.

WIRELESS

Radio to Lessen Congestion.—The Japanese Dept. of Communications has informed the "Japan Advertiser," that since the restoration of the Pacific cable to working order, the congestion in the cable service has decreased somewhat. The position, however, is far from satisfactory. Radios are going to be utilised for relieving cable congestion, and the receiving station that is being erected at Tomioka-mura, Fukushima Prefecture, which is almost complete, will, according to the Department of Communications, greatly relieve the existing congestion of cables between America and Japan. It is not yet definitely known when the new office will be opened to public use, but the probabilities are that before the month is over messages will be received by the new station.

Incidentally this is the first wireless station to come under the direct control of the Department of Communications. In the past radio messages to America for business purposes had to be sent through the naval wireless station at Funabashi. The Tomioka-mura station will be able to receive in the neighborhood of 8,000 words a day. A station to despatch wireless messages is being built at Harano-machi, about 25 miles from the Tomioka-mura receiving station, and will be ready some time in the summer. When both the new stations are in full working order, a great deal of the present inconvenience will automatically disappear.

PUBLIC UTILITIES

Manila's Water Supply.—Almost the first act of the Americans when they began to administer the Philippines was the creation of sewers and a water supply. Now the eight million peso plant is too small and the Metropolitan Water District board of Manila. at a meeting held at the office of Mayor Fernandez, chairman of the board, has chosen the Angat river, Bulacan, as the most suitable place for the construction of a new dam and headworks for the proposed waterworks designed to supply Manila. The board appropriated P.178,000 for the survey of the river, and will visit the place for inspection. The whole project will involve the expenditure of several million pesos.

MINING

Anglo-Chinese Coal Mine.—The coal mine discovered at Wangtsun along the Shantung line by Tung-I Kungssu of Tsinanfu was to be operated by Chinese. It is now reported, says the "China Advertiser," that satisfactory arrangements having been made between the firm and Mr. Stetton (?), British engineer, who was surveying the mine for the Chinese company, the enterprise will be carried out jointly. The necessary mining machinery will be purchased from Messrs. Andersen, Meyer & Co.

Japanese-Canadian Co.—Messrs. Shintaro Ohashi, Tsukei Sugawara and other businessmen are considering starting a new company styled the Canadian Industrial Development Company capitalised at Y.5,000,000 to exploit pyrite veins at Queen Charlotte Island near Vancouver.

Tunglin Copper Mines.—Some ten years ago the copper mines at Tunglin were purchased by foreigners, and that after a lot of trouble they were bought back by the natives of Anhui, but since then nothing has been done to develop the mining industry in the district. Recently some native merchants signed a contract with certain British capitalists, says the "Peking Daily News," for the operation of these mines. A Sino-British Corporation called the Chung Ing Kung Sze has been organized and an application has been sent to the Tuchun of the province for sanction. As it has been discovered that the concern has been fully financed by Japanese, who have already obtained absolute control of these mines, the Tuchun has ordered the applicants to address their application to the Ministry of Agriculture and Commeree, as he does not like to take any responsibility in the matter.

Fenghuangshan Iron Mine.—Gen. Li Shun has been advised by the Ministry of War in Peking to the effect that owing to the urgent demand for raw materials for military purposes, the Government is going to work the famous Fenghuangshan iron mine of Nanking and that for preventing complications with foreign Powers, the mine will be developed with Chinese capital and control without any foreign assistance. In view of the existing financial stringency, the native gentry do not believe that there is any foreign co-operation in the enterprise so that the leaders are going to convene a meeting to discuss this shortly.

It will be strictly a provincial property in the same way as is the famous Shuikoushan tin and antimony mine of Hunan, that is to say the mine shall belong to the province of Kiangsu and no company either foreign or native, can work it without the previous approval of the members of the provincial assembly at Nanking. "This will surely lead to serious dispute with the ministry of war officials who are endeavoring their best to nationalize all those iron mines which have not been given away to foreigners, for military uses, says the "Peking and Tientsin Times."

The mining of coal in the northern part of the Swatow district perforce progressed on account of high prices and inadequate supplies of the imported article. Mining was carried on by native methods and was chiefly confined to surface workings. The product is a very hard dust coal. It is used in briquet form in some native industries and mixed with rice husk in others.

CONSTRUCTION

Catholic Mission Builds Hospital.—Several hundred laborers have been at work since the first of the year on the new hospital compound belonging to the Roman Catholic Mission outside

Foo Chow Men, Nanchang. A modern institution is going up at a cost of $150,000 plus an endowment of $300,000 on the land which was given as an indemnity following the massacre of several Catholic priests a dozen years ago. The work is in charge of Father Paul Monteil who has recently returned from five years service in France. In addition to the general hospital building there will be isolation wards, and nurses' and doctors' homes. Equipment will be shipped directly from Paris and will be the most modern obtainable. It is expected that the hospital will be ready for occupancy by January of next year.

Cubist Hankow did not Materialize.—Hankow native city, which the Bureau of Reconstruction undertook to convert into "the finest and most modern city in the new republic," the "Central China Post" says: "Their first effort was to issue a map of the New Hankow. The draughtsman had taken a sheet of paper and a ruler. From top to bottom of his plan he drew a number of equidistant perpendicular lines, then an equal number of horizontal lines, making it look like a chess board, and finished off by drawing similar lines diagonally from corner to corner making it into a gridiron. He further drew several pictures of the new houses which were to be built in the new town and put them in the window: the Bureau gave an order for three steam road rollers to be supplied, and that was all it ever did."

FINANCIAL

57 Banks in Shanghai.—Trade depends upon finance for its vitality, but it is to the banks that we look for the efficient handling of finance, says the "North-China Daily News." Shanghai, being the central emporium of commerce in this country, holds a position that may financially be likened to that held by New York in America, though not of the same magnitude, of course. Therefore, the banking business here has developed to a remarkable extent, in fact, it has enjoyed unprecedented prosperity for several years past, until now Shanghai stands easily at the head of all the towns and ports in this respect.

At first, foreigners were predominant among those doing banking business, but latterly Chinese merchants have been attracted to embrace the modern system of working a bank. The majority of the latter have, however, come to grief, owing more or less to incompetency and want of experience. Only in very recent years have modern banks promoted and operated by Chinese gradually been enabled to hold their ground.

At present, there are 18 foreign banks, 18 Chinese banks, four Chinese-foreign cooperated banks, seven newly-opened and 10 in course of promotion, or 57 in all. All Chinese banks run on the old, orthodox lines handed down from ancient times, are not included in the above category.

The Wine and Tobacco Loan.—The "Peking Leader" states that Mr. Lamont is refusing to reconsider the Wine and Tobacco Loan on account of the following three reasons: (1) Wine and tobacco are not indispensable to the people and are annually imported into China on a large scale. Therefore they could not be considered an adequate security especially when compared with the salt revenue and customs duties. (2) His aim being to investigate the general financial situation in China for the purpose of establishing the amount of financial aid to be extended by the Consortium, he could not be favorable to small loans. (3) There prevails a strong public opposition to the Wine and Tobacco Loan which places obstacles in the way of putting it into shape.

Loan to Pay Off Deficit.—The Chinese press reports that the Ministry of Communications proposes that a loan should be secured from the Consortium of $20,000,000 to pay off the deficit of the Chinese Eastern Railway, and also to effect the necessary improvements, offering the railway as security.

Chinese Banks to Pay Workmen.—The Harbin local agencies of the Bank of China and the Bank of Communications have been instructed by the Peking government to co-operate with the administration of the Chinese Eastern Railway in connection with the payment of the workmen and agents, Russian as well as Chinese and it is reported that China agrees to pay the sum of seven hundred thousand dollars through these two banks every month. The only question unsettled is that the Chiness merchants at Fuchiatien and other cities along the line still refuse to accept torn Russian bank-notes issued by defunct Russian government.

Hupeh Assembly *v.* Han-Yeh-Ping.—The members of the Hupeh provincial assembly were called into a special session for the discussion of financial questions concerning the famous Hanyeh-ping corporation *vis-a-vis* the Hupeh government. It appears, says the Asiatic News Agency, that in accordance with the stipulations of the Sino-Japanese treaty of 1915, this corporation will probably be reorganized, that is to say Japanese influence will be actually introduced in the administration so that more Japanese money can be utilized for the development of its concessions in Tayeh and Pinghsiang and owing to certain disputes, the people of this country desire to withdraw those shares which were contributed to the corporation by the provincial government of Hupeh when the late Sheng Hsuan-huai was its director-general for about twenty years.

Further, the people of Hupeh maintain that as the iron mines of this corporation are situated within the territory of this province, the shareholders, either government or private, will not be permitted to admit foreign control without the previous sanction of their representatives that is to say the provincial assembly.

Chartered Bank Dividend.—Reuter is informed that at the approaching annual general meeting of shareholders of the Chartered Bank of India, Australia and China the Directors will recommend that a dividend be declared for the past half year at the rate of 14 per cent. per annum and a bonus of £1 5s. per share free of income tax (making 20 per cent. for the year free of income tax), that £100,000 be added to the reserve fund (which will then stand at $3,000,000) that £25,000 be added to officers' superannuation fund, that £75,000 be written off premises account, and that £172,830 36s. 10d. be carried forward.

Nikko Security Co.—A new business organization, capitalized at Yen 10,000,000, to be called the Nikko Security Company, will shortly make its appearance in the Japanese business world. The Industrial Bank of Japan will give it the necessary financial backing, and the new Company will handle ordinary trust business.

One-half of the capital will be supplied by the Industrial Bank of Japan. The remaining Yen 5,000,000 will be contributed by leading financiers. None of the new Company's shares will be sold in the open market. The first instalment of the stock capital will have to be completed by April, and the Nikko Security Company will begin operations in May. Among the business that it will be interested in is the acceptance and sale of new issues, making of loans on negotiable security documents, acceptance of bills, issuing of letters of credit and the investment of capital in industrial concerns.

MISCELLANEOUS

Japanese-Soviet Pact.—There is a report in Harbin that Japan has signed an agreement with the Russian Soviet Government at Moscow. In return for the withdrawal of the Japanese troops from Siberia and the revival of Russo-Japanese diplomatic relations, the Soviet Government agrees to concede all Russian mining, railway and forestry concessions in Manchuria and Mongolia, either developed or undeveloped and that Japan is going to survey and build the Ping-Hei line, that is from Harbin to Tsitsihar, as a branch of the Chinese eastern railway, shortly. The conference between General Pao and General Horvath concerning the administration of the Chinese eastern railway continues smoothly.

Mukden's American Association.—Announcement has been made that the newly organized American Association of Manchuria, whose headquarters are in Manchuria, will act in the capacity of an American Chamber of Commerce until a separate body is formed. The new association was organized by American residents in Manchuria at the American Consulate on December 17 last. Its object, stated in Article 2 of its constitution, will be "to uphold American ideals and to foster and safeguard the commercial and other interests of the citizens of the United States in Manchuria and elsewhere in China." The new body also will gather and distribute information of value to its members and seek to better relations between Americans, Chinese and other nationals in Manchuria. It intends to collect and administer a local American relief fund and co-operate with other American associations for the purposes of relief work of various kinds. Mr. J. E. Brown is secretary and treasurer.

Philippine Tobacco Products.—That the high reputation established by Philippine tobacco and products manufactured therefrom in the United States market has now re-established itself, after the exportation of musty cigars temporarily impaired this reputation, is shown by the fact that the exportation of cigars, cigarettes, leaf and partially manufactured tobacco for the first quarter of this year is considerably greater than the exportation for the same period in any of the three previous years.

The Philippine cigar manufacturers are confident that, with the resumption of normal, pre-war shipping schedules on all the big ocean routes, a big boom in the Philippine tobacco industry is inevitable. It is predicted that if the increase for the next two years keeps pace with that of the last three months, the supply of available raw material will not be sufficient to feed the factories fast enough to cover the demand on the American and European markets.

Following is a statement issued by the collector of internal revenue regarding the exportation of Philippine tobacco and its manufactures for the first quarter this year and the same period in previous years:—

Cigars.

Quarter		1917	1918	1919	1920
First.	no.	44,123,687	58,666,616	59,399,724	72,846,140

Cigarettes.

,,	,,	1,403,500	1,662,500	930,000	1,204,[illegible]

Leaf Tobacco.

,,	kilos.	231,430	94,425	—	25,[illegible]

Partially Manufactured Tobacco.

First, kilos.	402,331	559,459	32,380	184,[illegible]

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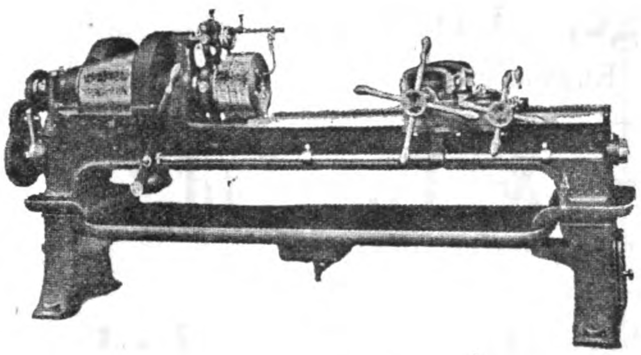

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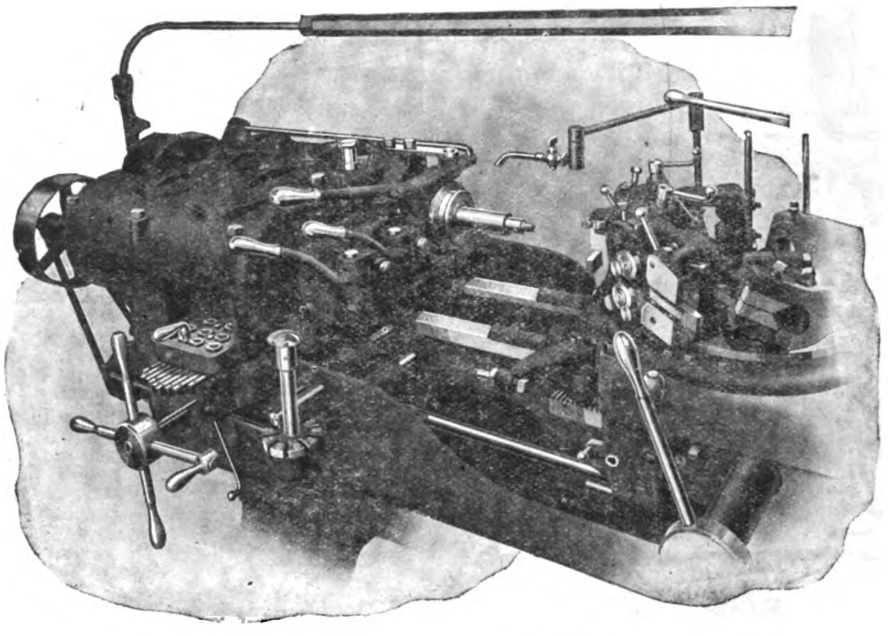

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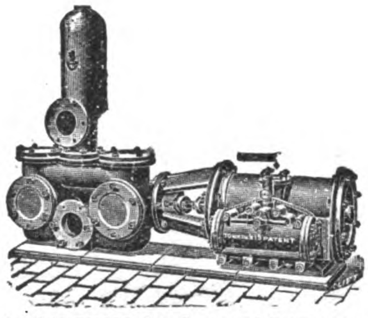

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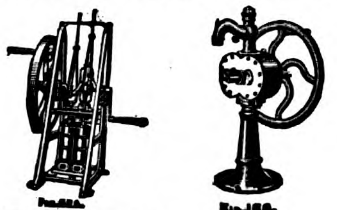

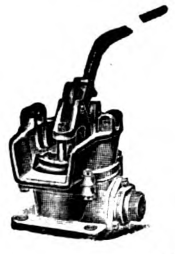

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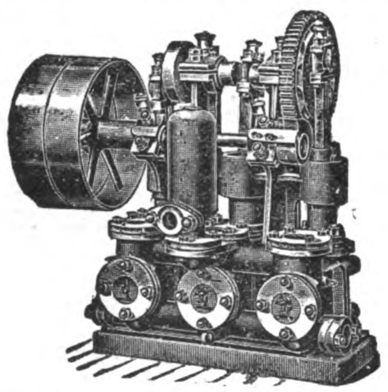

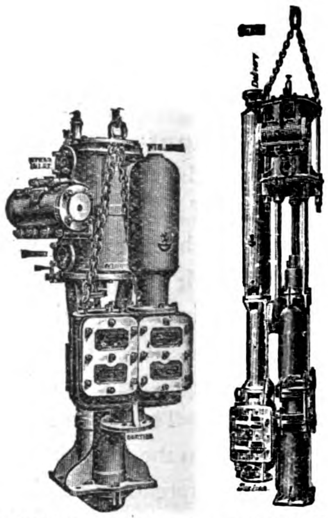

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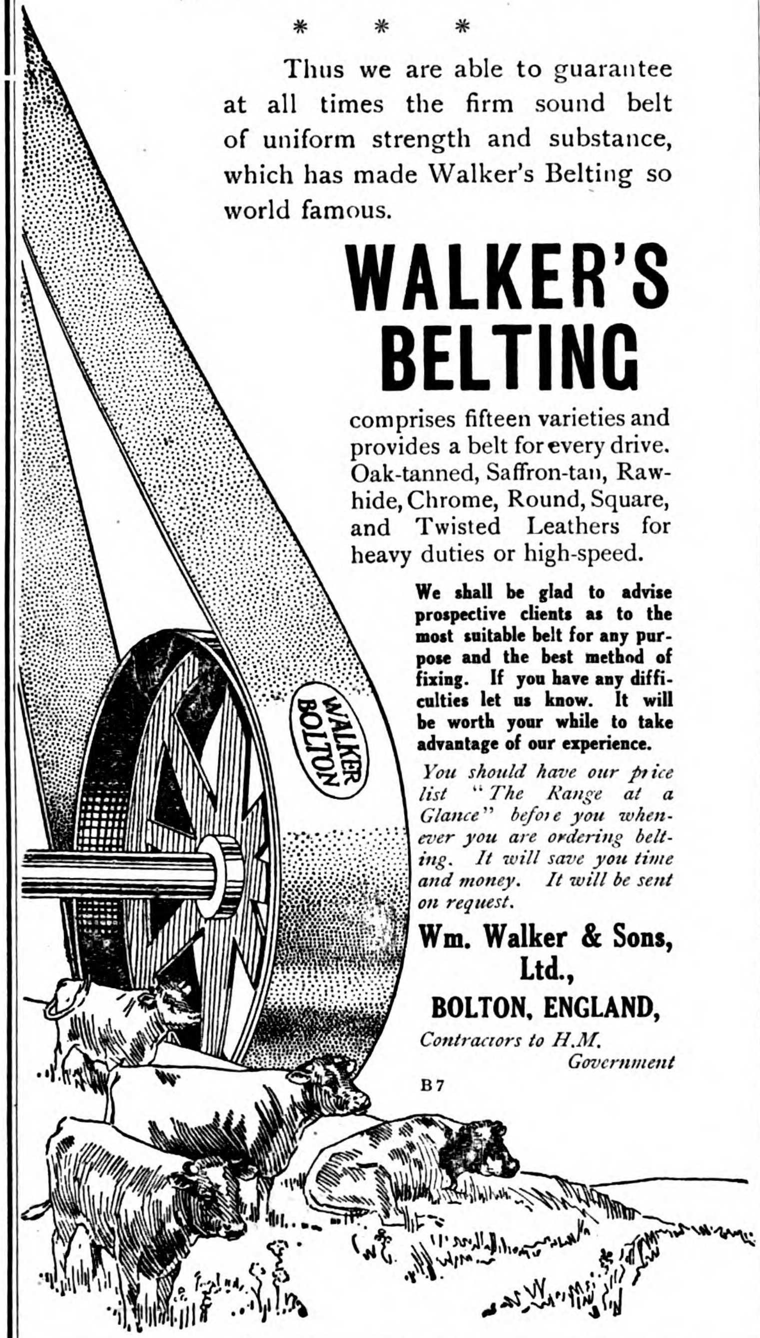

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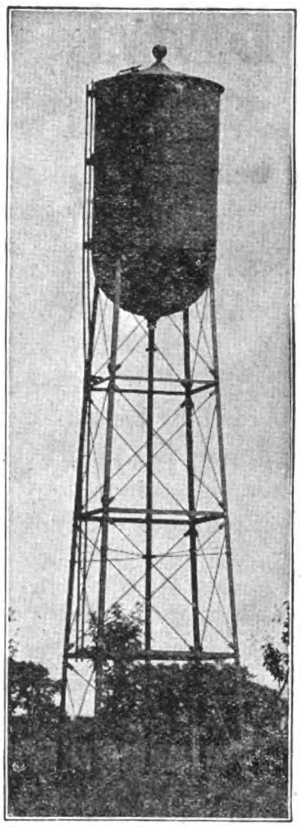

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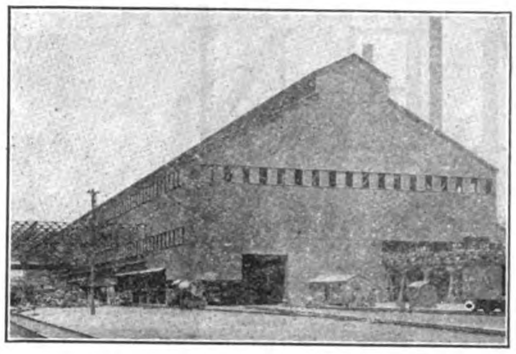

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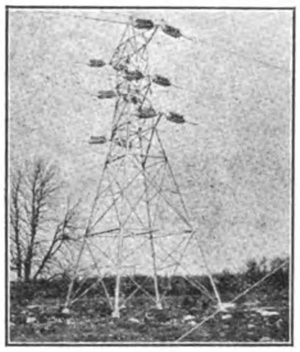

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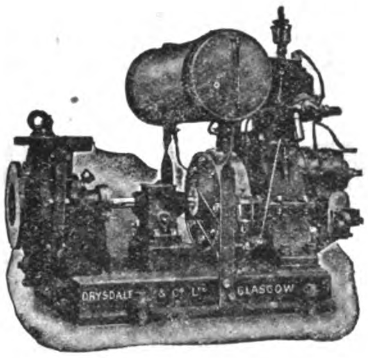

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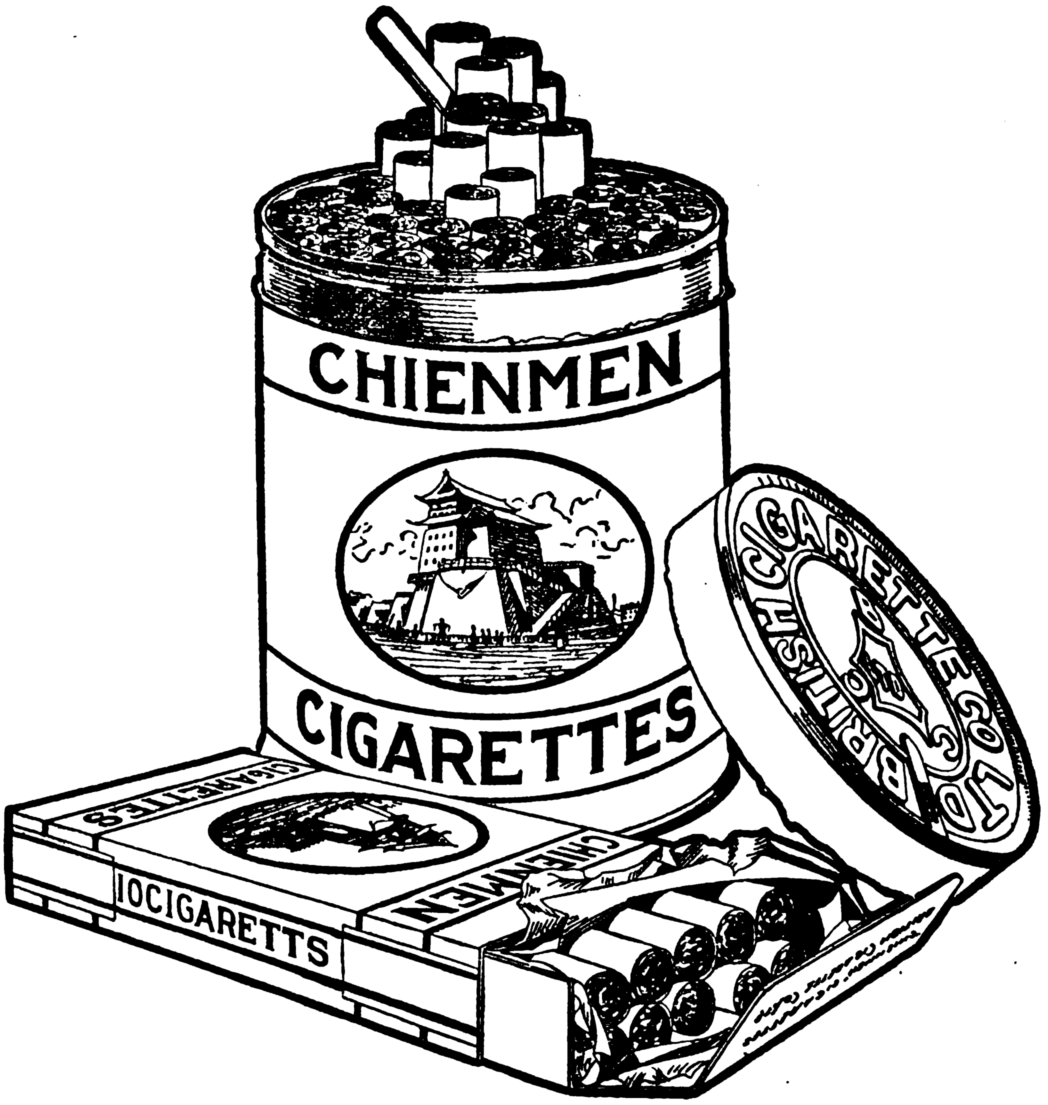

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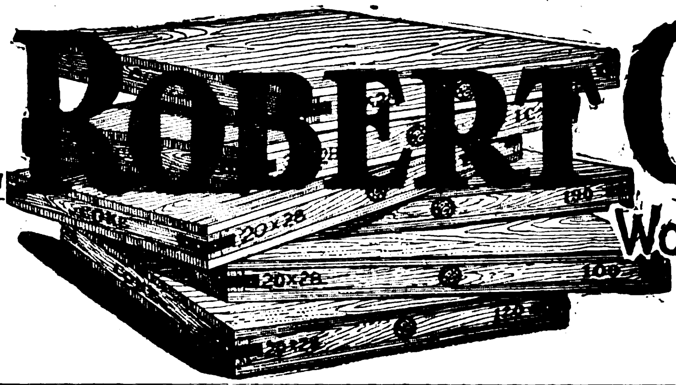

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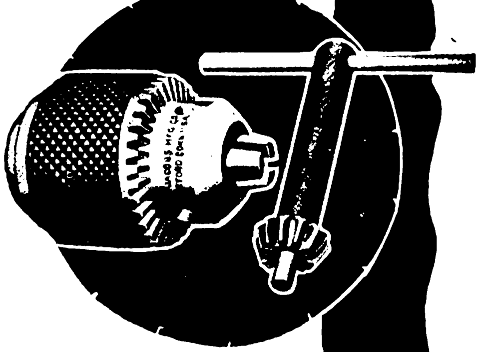

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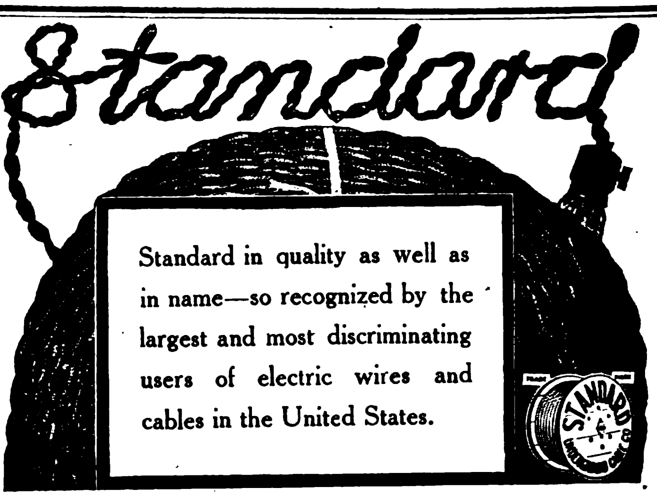

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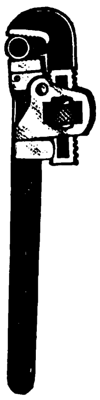

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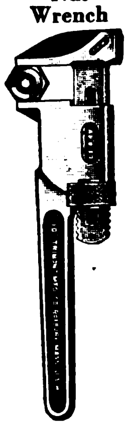

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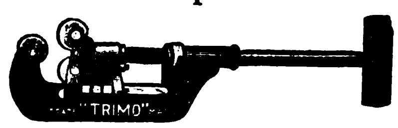

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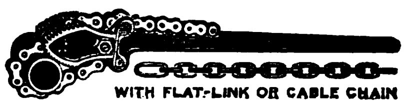

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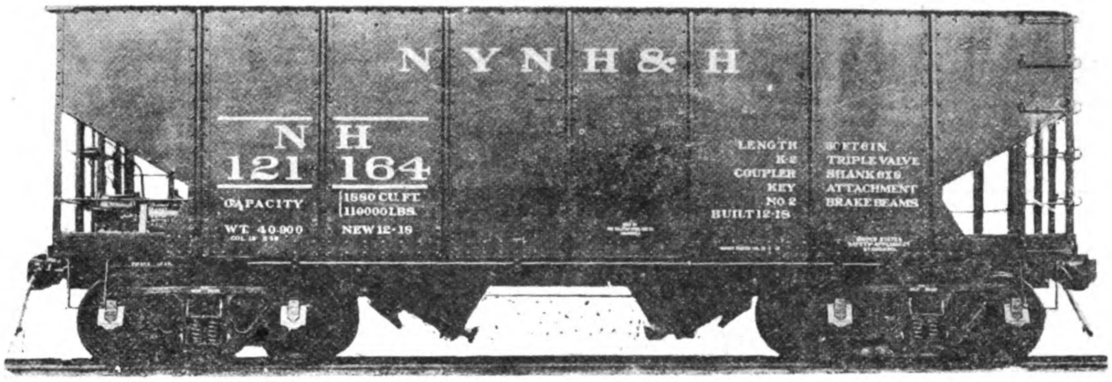

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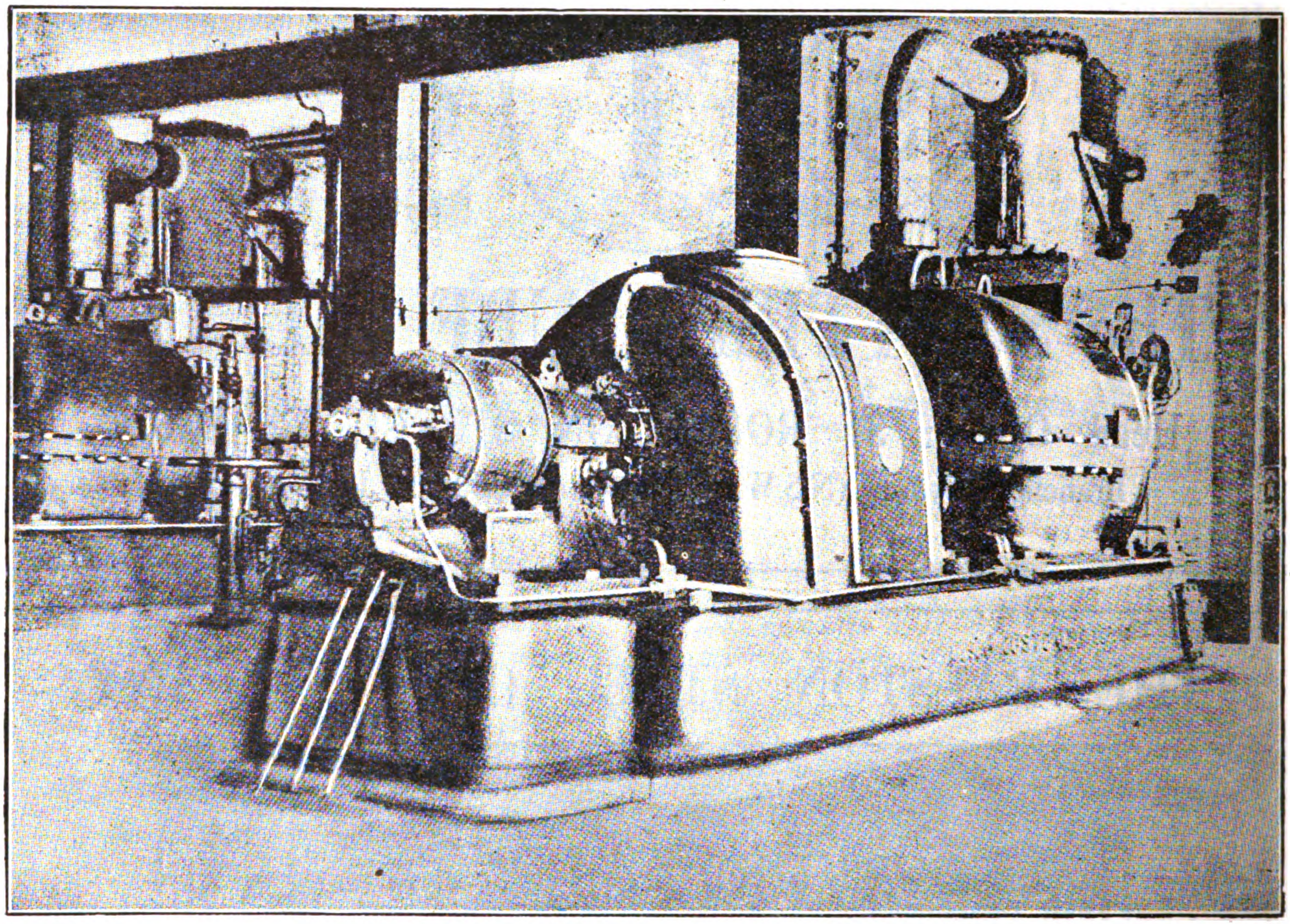

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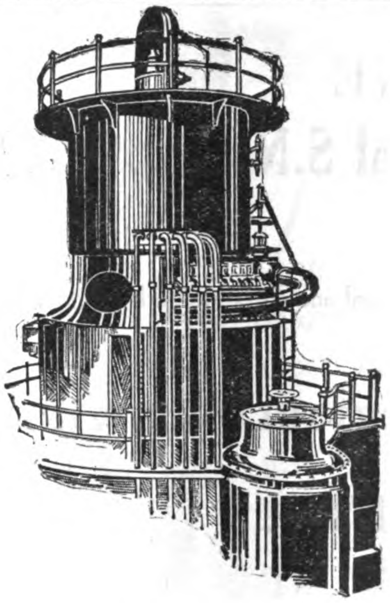

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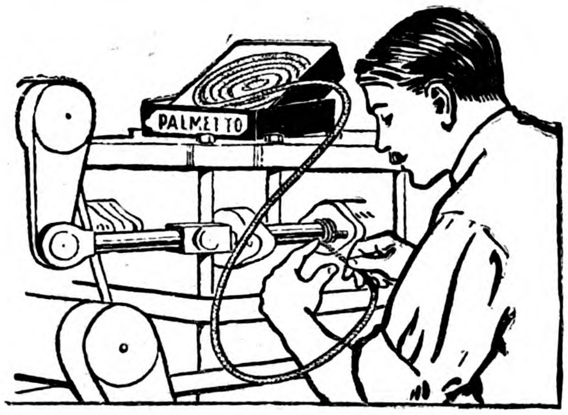

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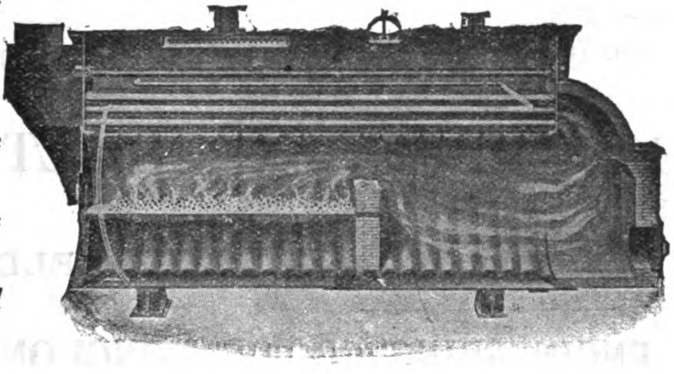

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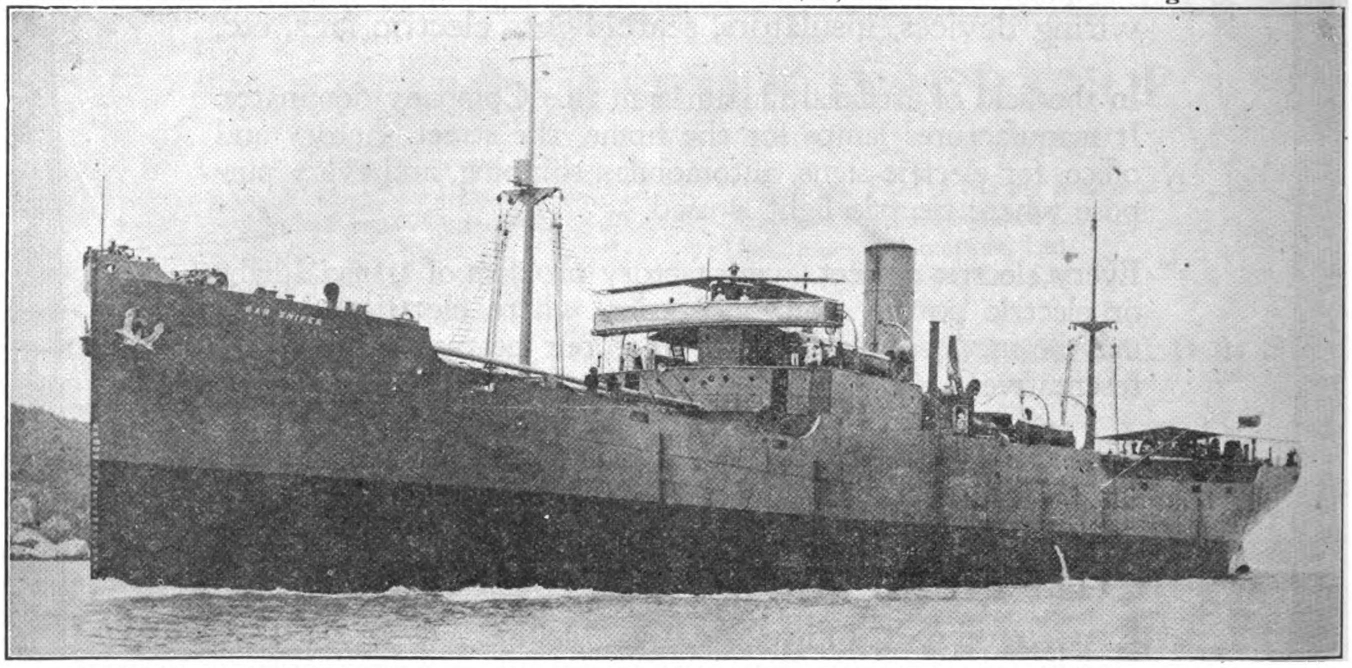

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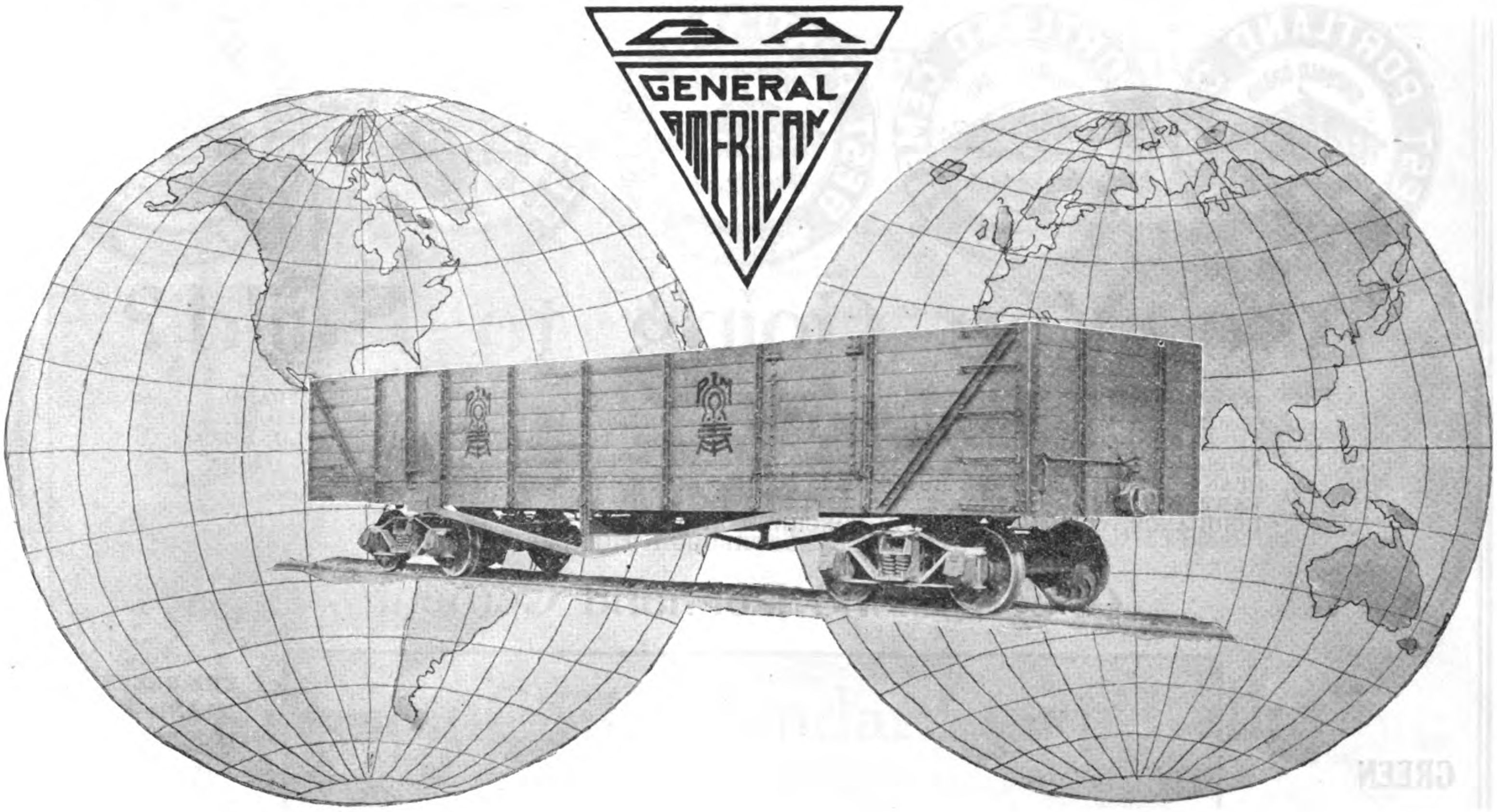

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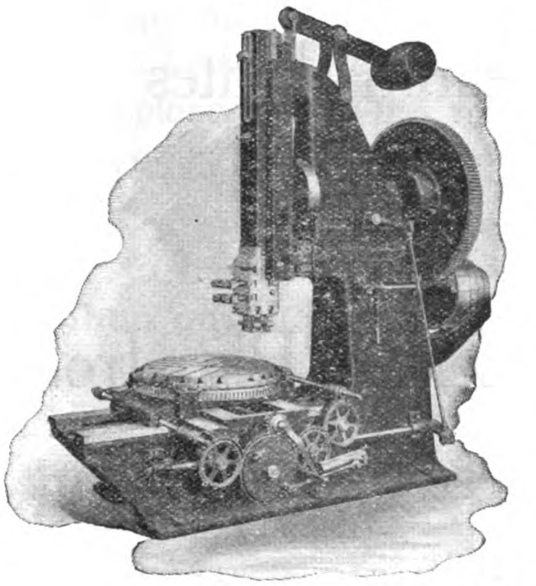

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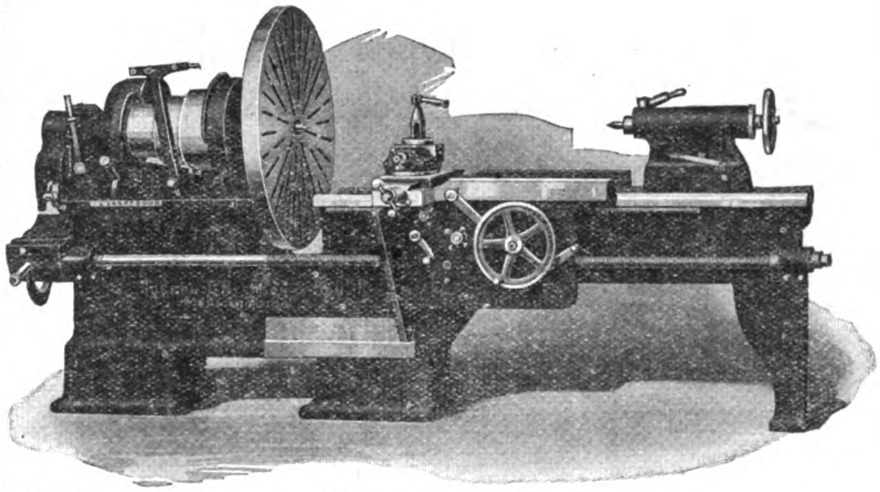

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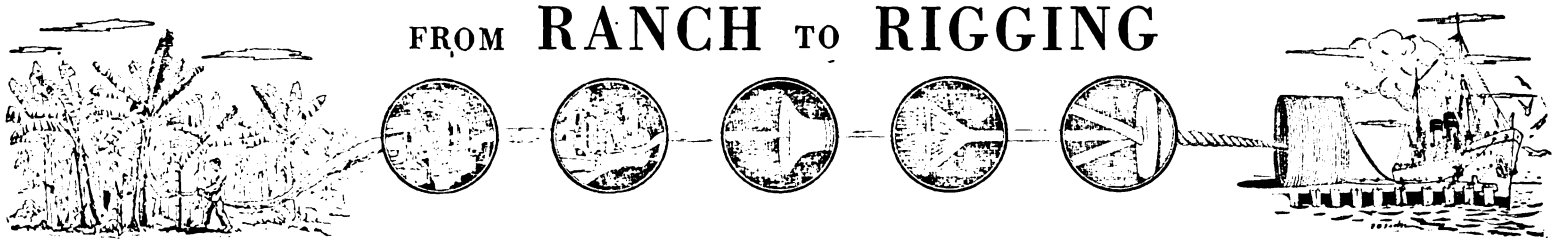

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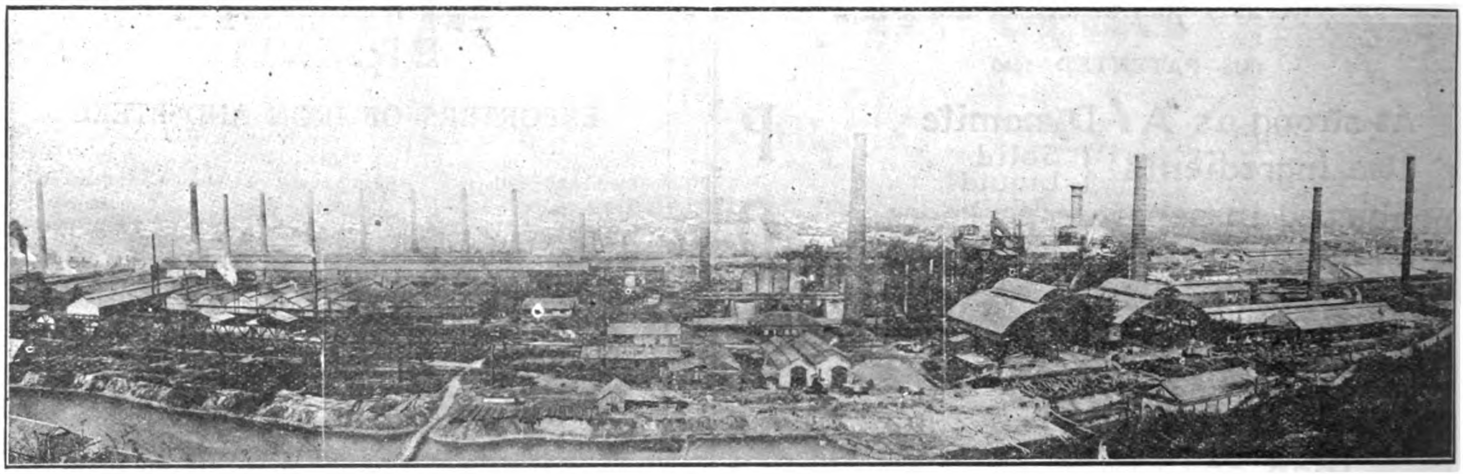

GENERAL VIEW OF HANYANG IRON AND STEEL WORKS

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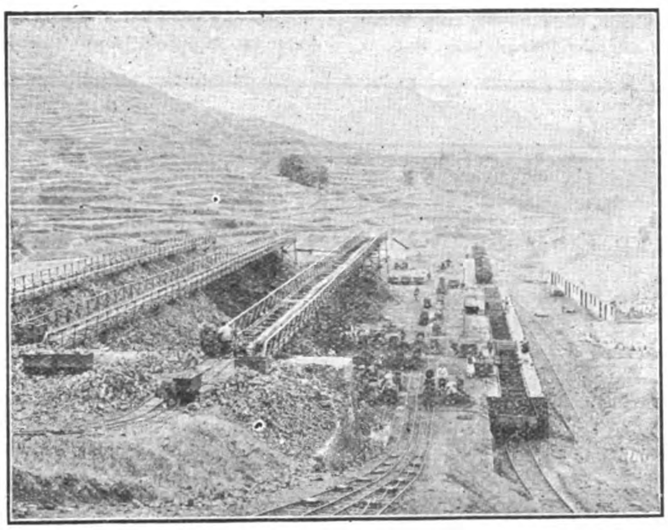
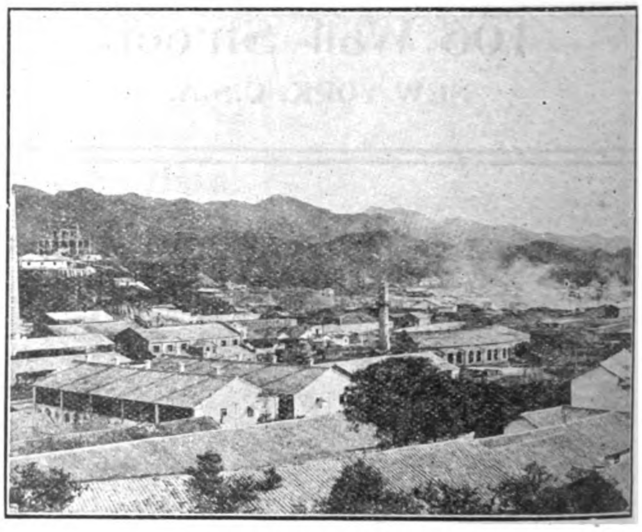


THE TIEHSHAN MINE AT TAYEH



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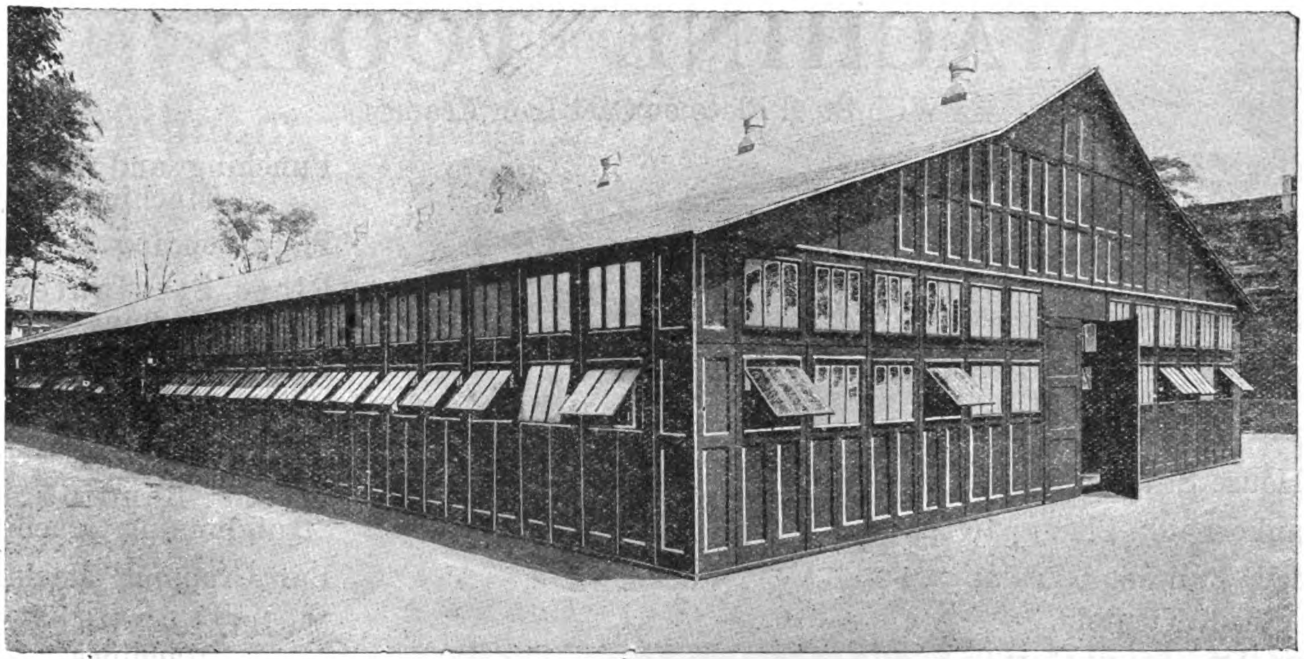

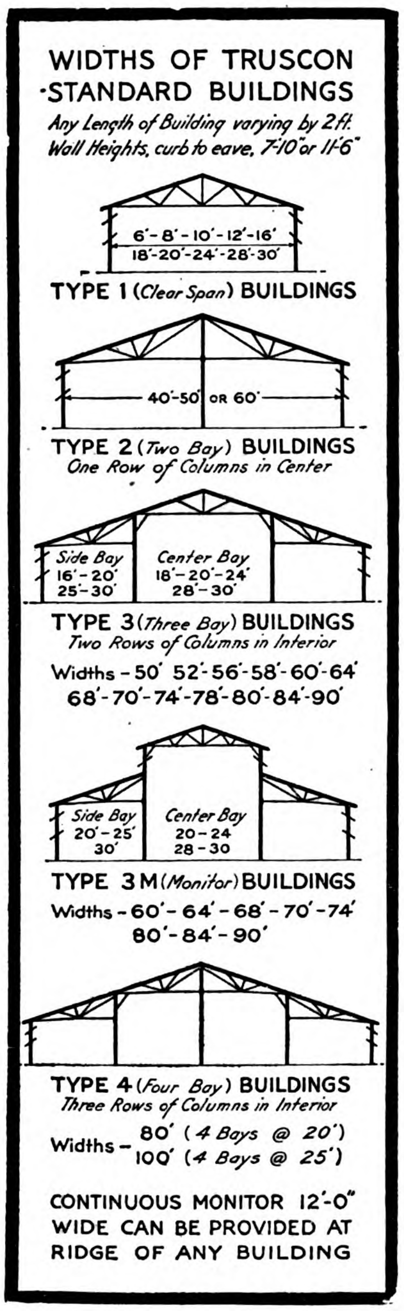

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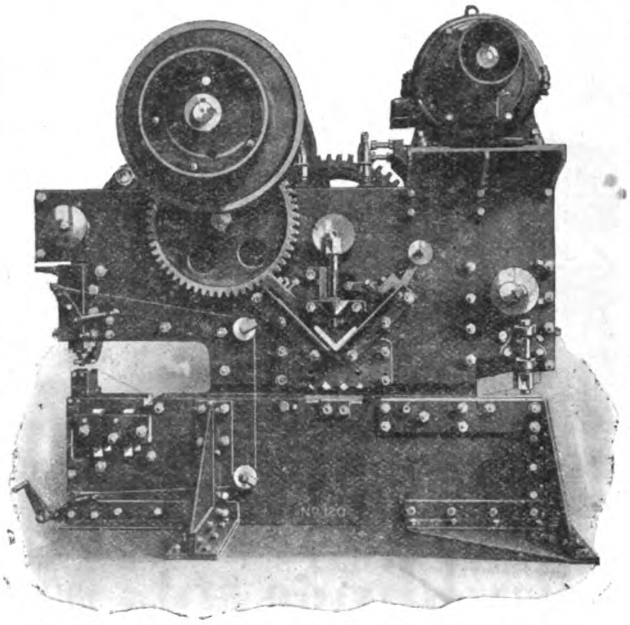

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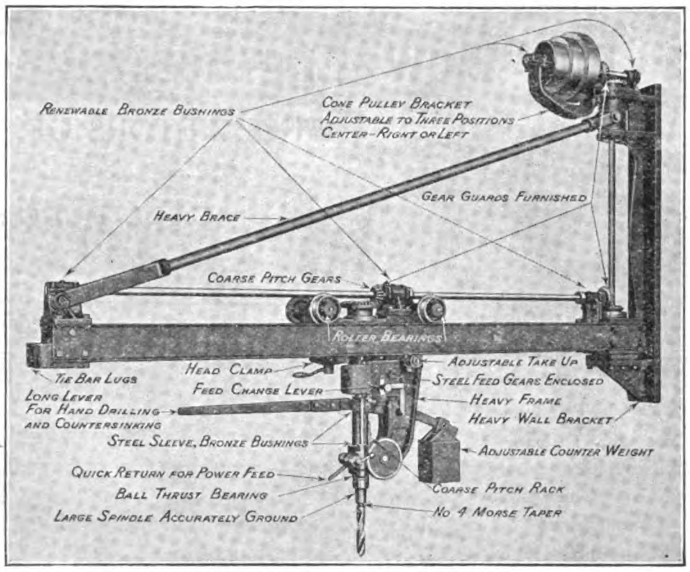

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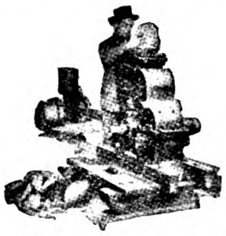
Other lengths of arm to suit requirements.



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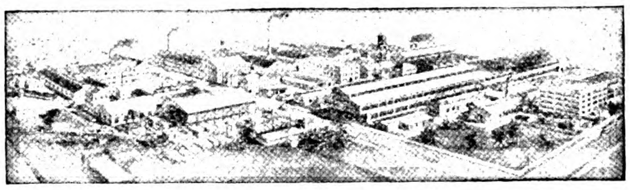

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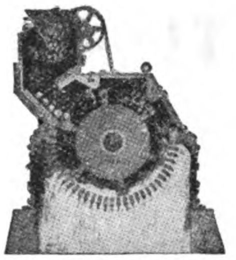

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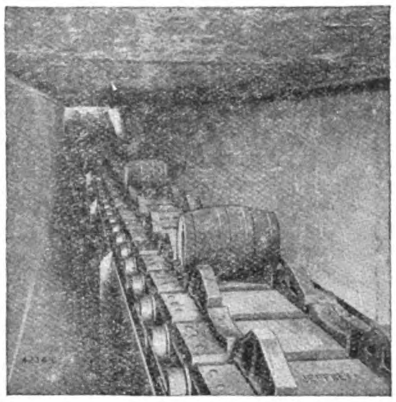
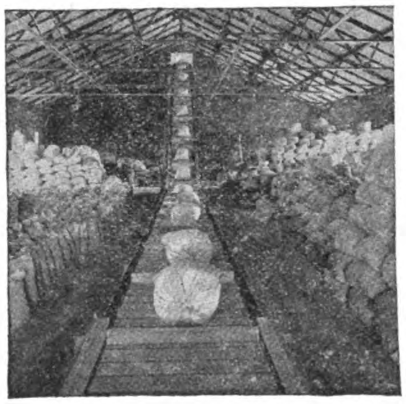


Wood Apron Type of Conveyer for handling Barrels, Bags, Packages, etc.



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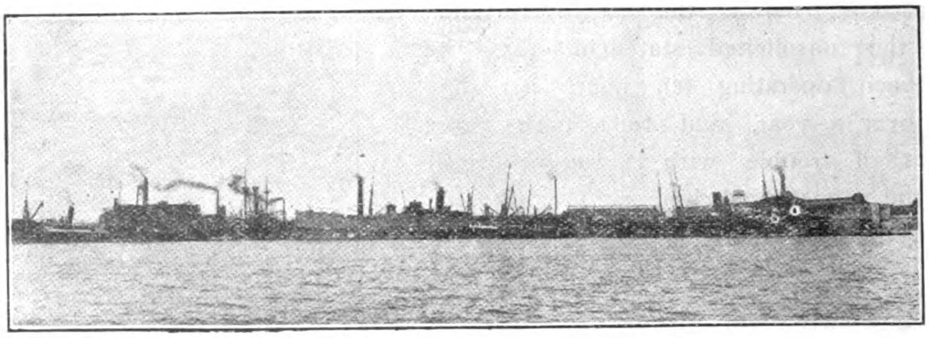

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Depth on 3 feet blocks	(do)	21 ,,

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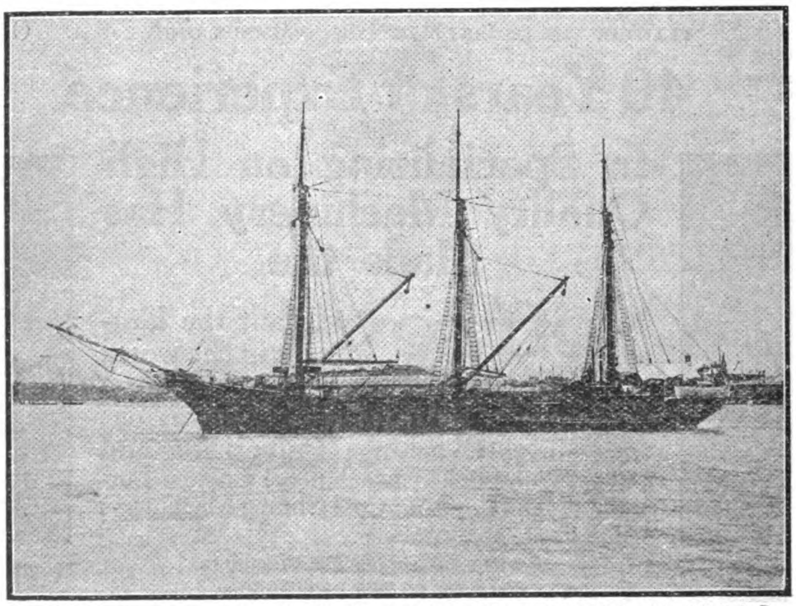

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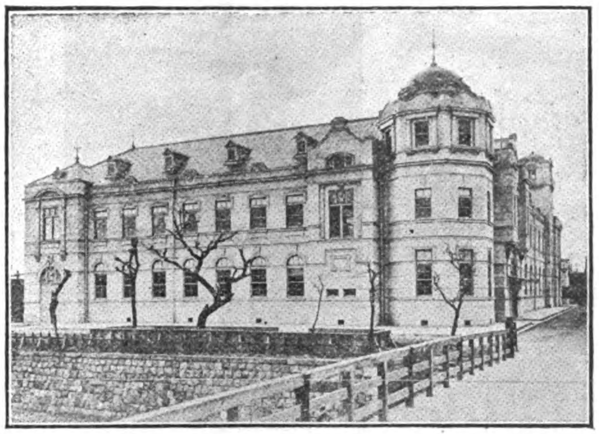

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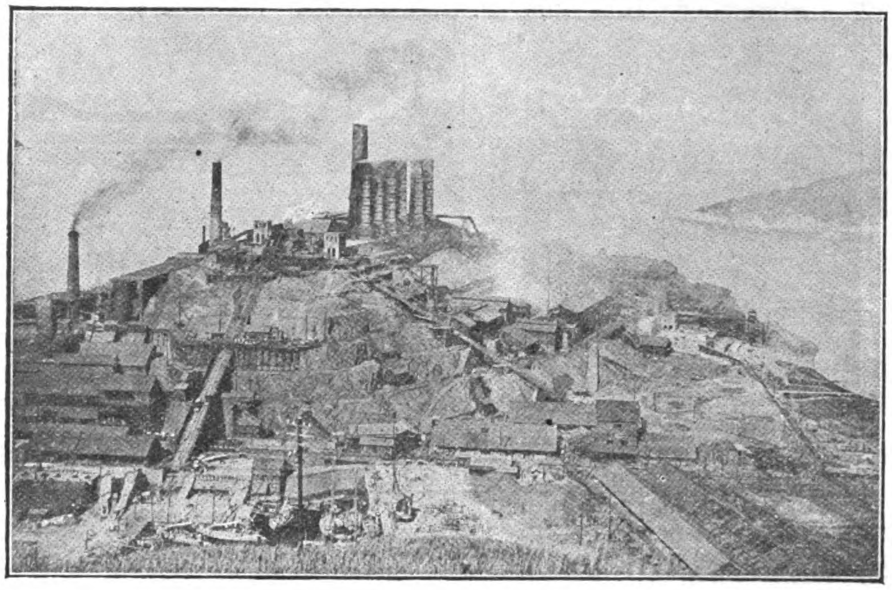

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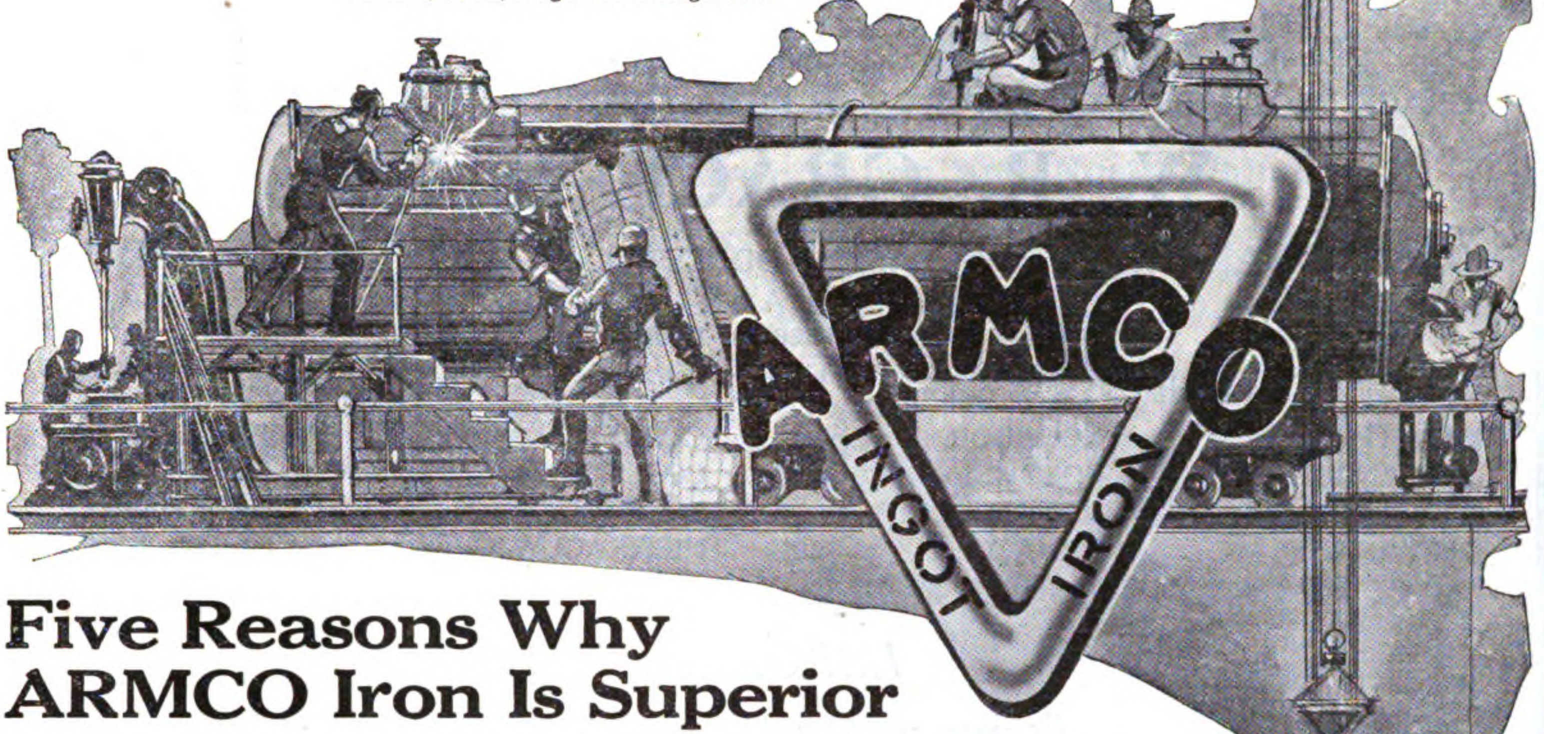

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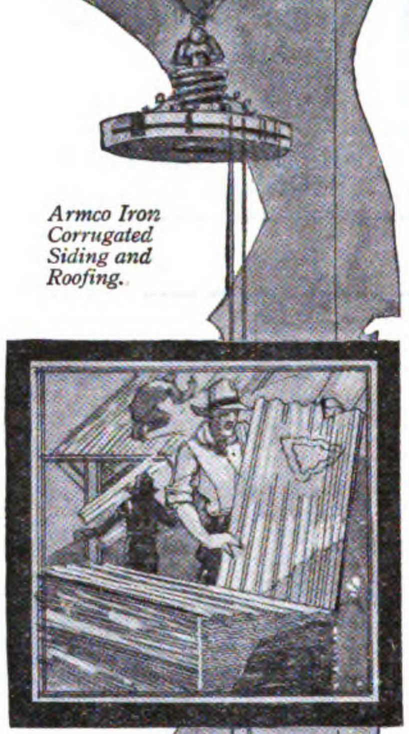

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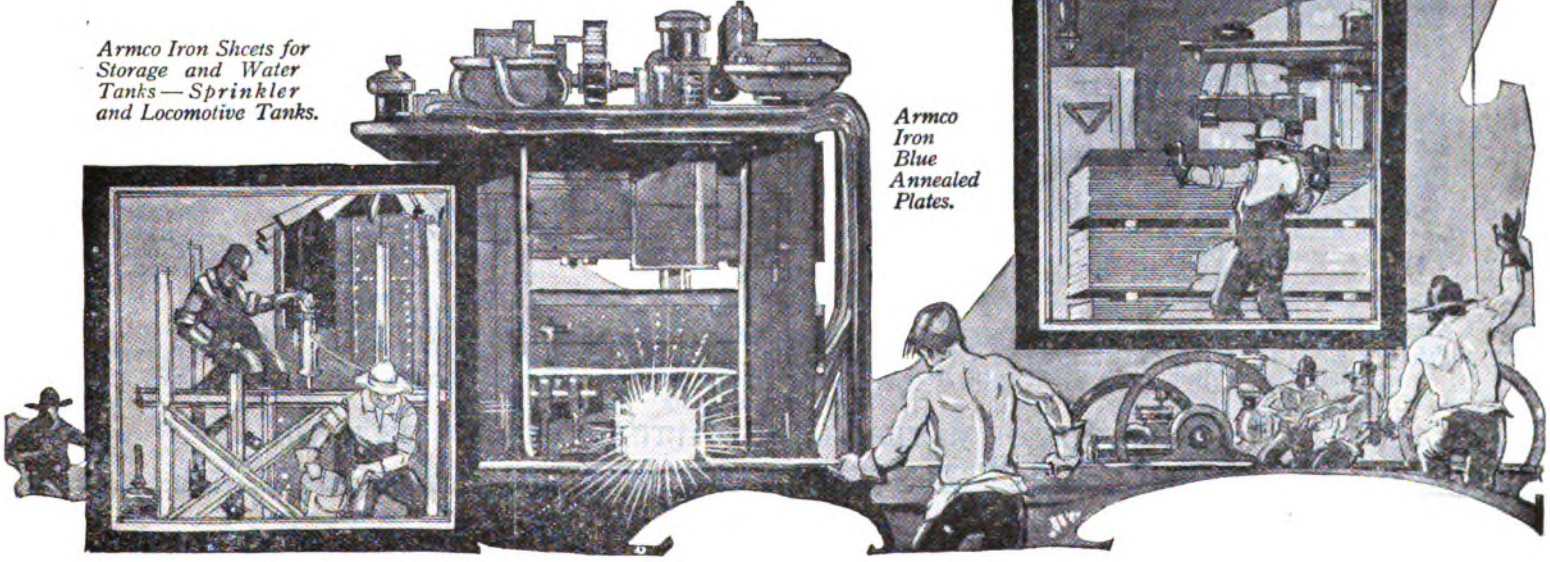

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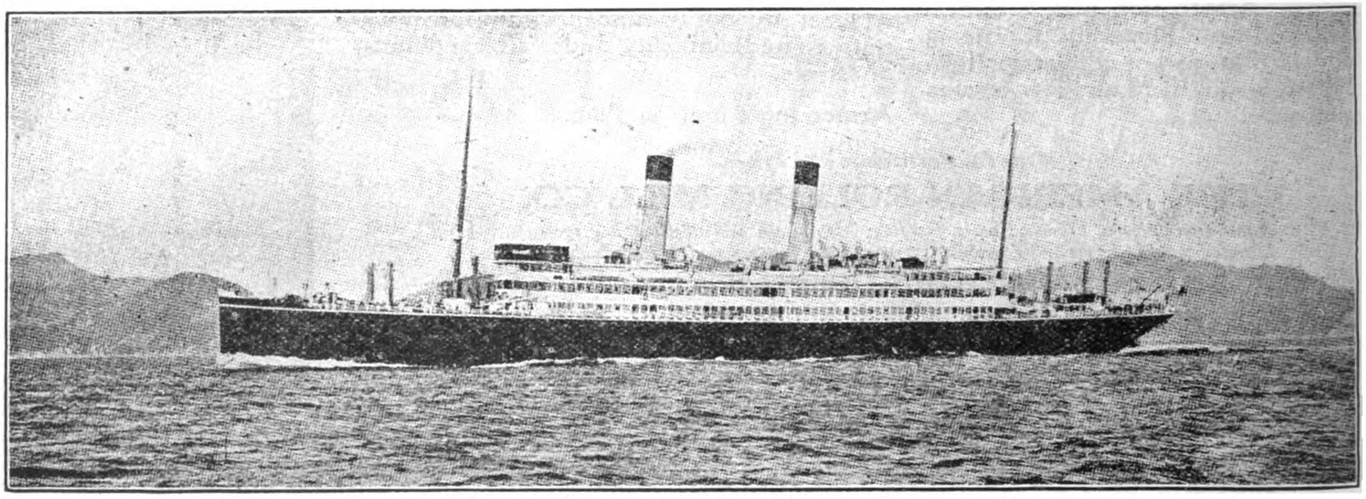

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MITSUBISHI ZOSEN KAISHA, LTD., NAGASAKI WORKS

(ex Mitsubishi Dockyard & Engine Works, Nagasaki)

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Extreme Length	523	Ft.
Length on Blocks	513	,,
Width of Entrance on Top	88	,,
,, ,, ,, ,, Bottom	77	,,
Water on Blocks at Spring Tide	26½	,,

DOCK No. 2

Extreme Length	371	Ft.
Length on Blocks	360	,,
Width of Entrance on Top	66	,,
,, ,, ,, ,, Bottom	53	,,
Water on Blocks at Spring Tide	22	,,

DOCK No. 3

Extreme Length	722	Ft.
Length on Blocks	714	,,
Width of Entrance on Top	99½	,,
,, ,, ,, ,, Bottom	88½	,,
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With Special Facilities for Handling the Heaviest Castings and the Repairing or Building of Ships, Engines, and Boilers
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LARGE STOCK OF MATERIAL AND FITTINGS ALWAYS ON HAND

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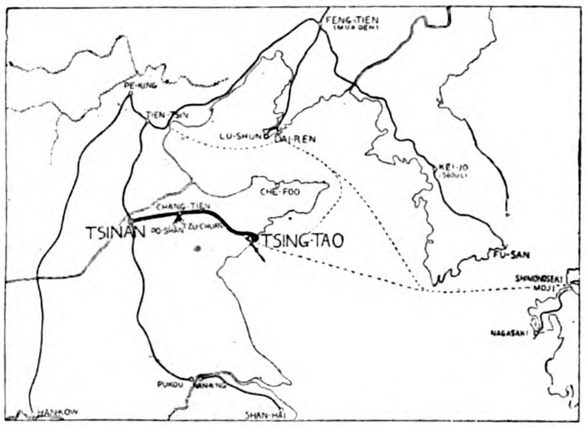


THROUGH TRAFFIC

Through passenger tickets are issued between the following principal stations of the Shantung Railway: Kiaochow, Kaomi, Fangtsu, Weihsien, Chingchow, Changtien, Chowtsun, Tsinan, Tzuchuan, Poshan, and the following points: In Manchuria—Port Arthur, Newchwang, Liaoyang, Fushun, Mukden, Tiehling, Kaiyuan, Changchun, Penchihu, Antung, and Dairen; in Japan—Yokohama, Nagoya, Yokkaichi, Osaka, Kobe, Ujina, Moji, Shimonoseki and Shanghai.

Steamer Connections—Steamers leave the wharves of the Large Harbour, Tsingtao, for Moji and Kobe every five days, for Shanghai about twice a week and for Dairen about three times a week.
For giving facilities to through passengers for Japan, a special train in connection with the night train No. 4 is operated from the Harbour Station to the Wharf, direct alongside the ship, on those days when the liners of the Nippon Yusen Kaisha, Osaka Shosen Kaisha, and Harada S.S. Co. are leaving.
Through passengers and their luggage are carried free of charge for this section.

Collieries—The Tzuchuan (Shisen) and Fangtzu (Boshi) Collieries are managed by the Mining Department of the Shantung Railway.
At present the daily output of Tzuchuan coal is about 1,500 tons, far surpassing the amount taken out when the Germans were in control. The coal is well-known for its good quality and fair price.

Tsinan—Tsinan, the capital of Shantung, is the western terminus of the Shantung Railway, and also one of the most important stations on the Tientsin-Pukow Railway.
The Tsinan Railway Hotel, furnished in modern European style, is found on the upper floor of the Tsinan Station, under the control of the Shantung Railway Administration.

THROUGH TRAIN SERVICE

Train No. 1 leaves Tsingtao daily 8.00 a.m. arrives Tsinan 6.30 p.m.
Train No. 3 leaves Tsingtao daily 7.00 p.m. arrives Tsinan 7.00 a.m.
Train No. 2 leaves Tsinan daily 9.00 a.m. arrives Tsingtao 7.30 p.m.
Train No. 4 leaves Tsinan daily 8.30 p.m. arrives Tsingtao 8.30 a.m.

Local Trains run between Tsingtao and Weihsien, Fangtzu and Tsinan, and on the Poshan and Tzuchuan colliery branches.

Fares—Tsingtao-Tsinan—1st class, $14.30; 2nd class, $7.20.

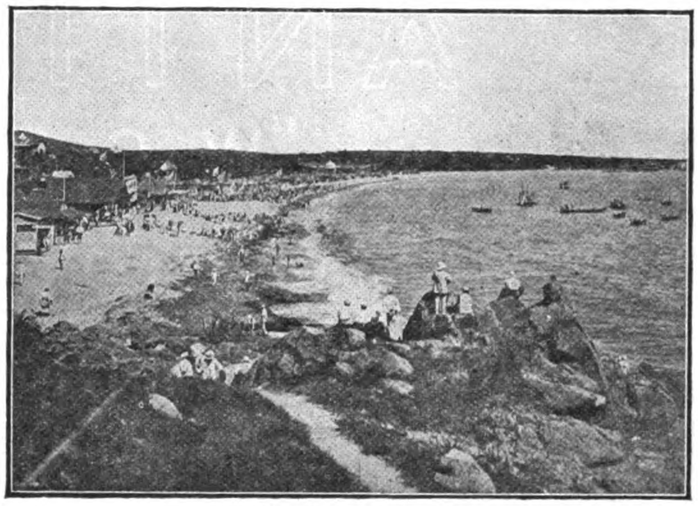
First Class Sleeping Car—A first-class sleeping car is attached to night trains Nos. 3 and 4 running between Tsingtao and Tsinan. For a berth in the sleeping car three yen in silver is charged in addition to the ordinary first-class fare, irrespective of distance.

Dining Car—A dining car is attached to through trains Nos. 1, 2, 3 and 4 running between Tsingtao and Tsinan. Meals are served to order at any time.

Ticket Agencies—The International Sleeping Car and Express Trains Co. and their Agents; Messrs. Thos. Cook & Son and their branch offices in various parts of the world.

Connections at Tsingtao—By steamer with Japan, Manchuria and Shanghai.

Connections at Tsinan—By Tientsin-Pukow Line with Tientsin, 6.40 a.m. daily, and with Pukow, 8.15 p.m. daily.



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Description of Tsingtao

Tsingtao is considered the most healthful place in all the Far East. The scenery including both mountains and sea, is most beautiful. There are quite extensive forest gardens, bits of woodland here and there, and many delightful shady lanes affording most interesting walks through them.
The roads are all broad, with very moderate gradients. They are of both macadamized and asphalt construction for vehicle traffic, while the sidewalks are either paved or concrete. These streets are practically all lined with beautiful shade trees.
The buildings are constructed principally in modern European style, with red tiles and white walls, contrasting pleasantly with the surrounding green mountains and blue sea.
The climate here is fine from Spring to Autumn, being neither too hot nor too cold. These climatic conditions make the place a favourite summer resort for Europeans and Americans from Shanghai, Tientsin, and other places.
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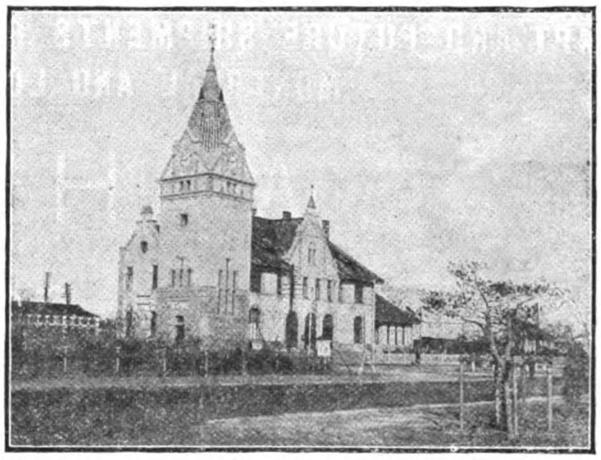

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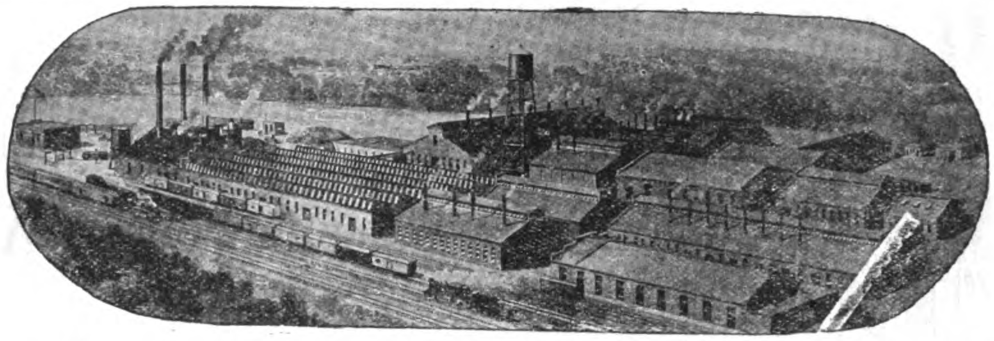

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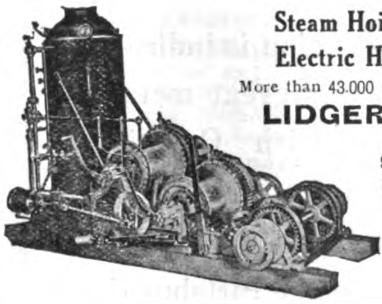

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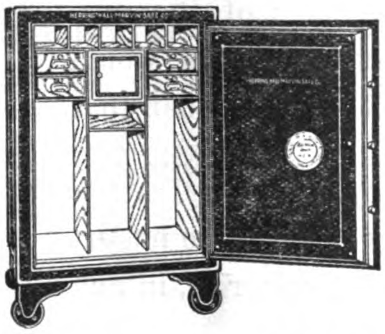

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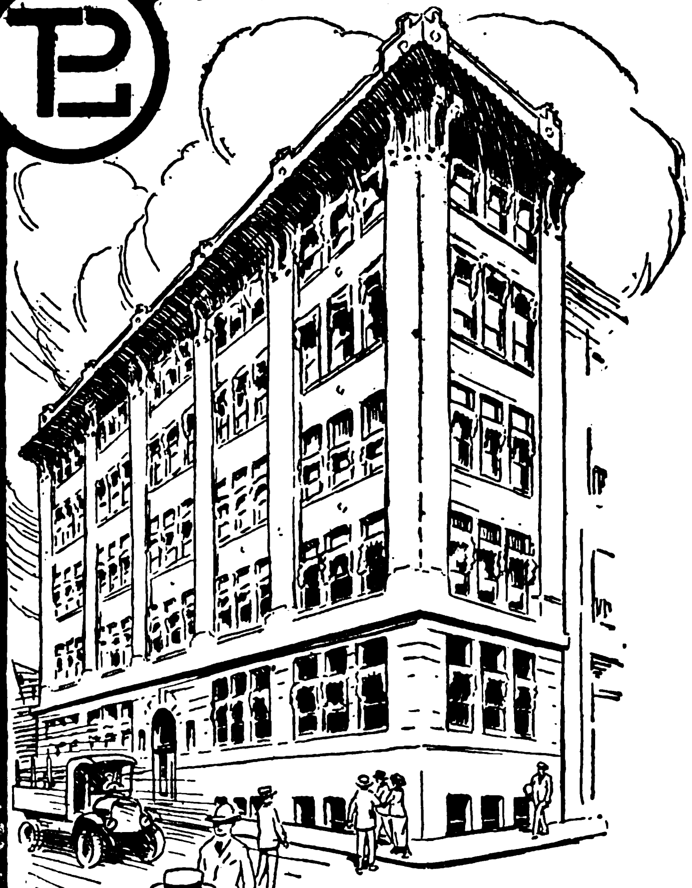

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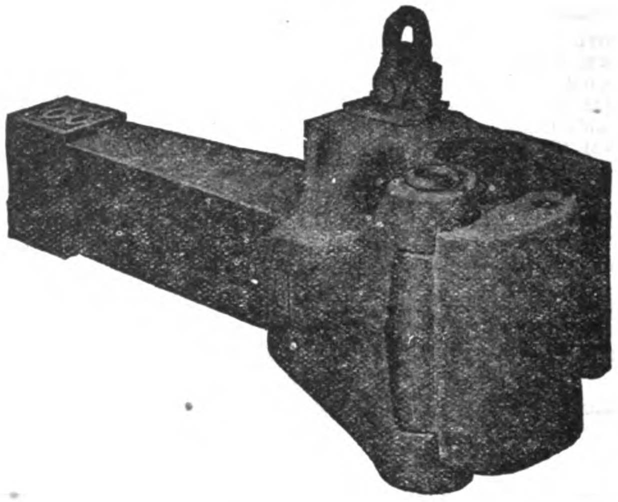

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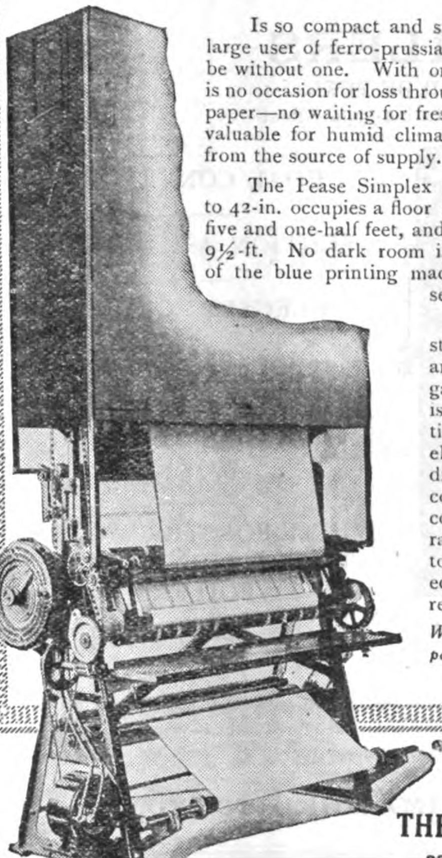

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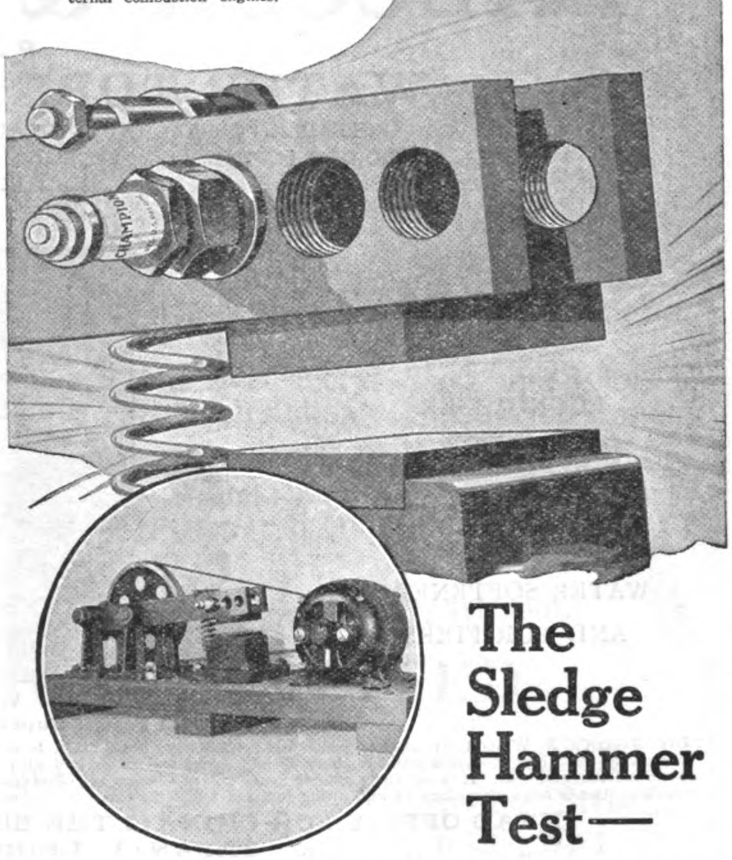

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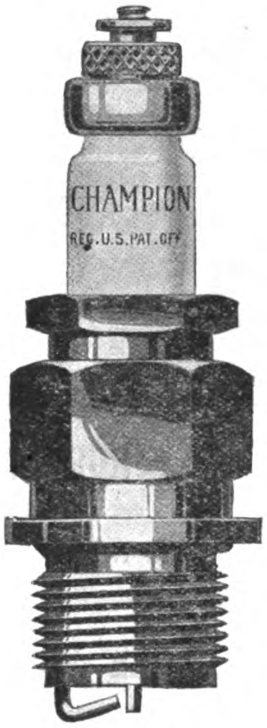

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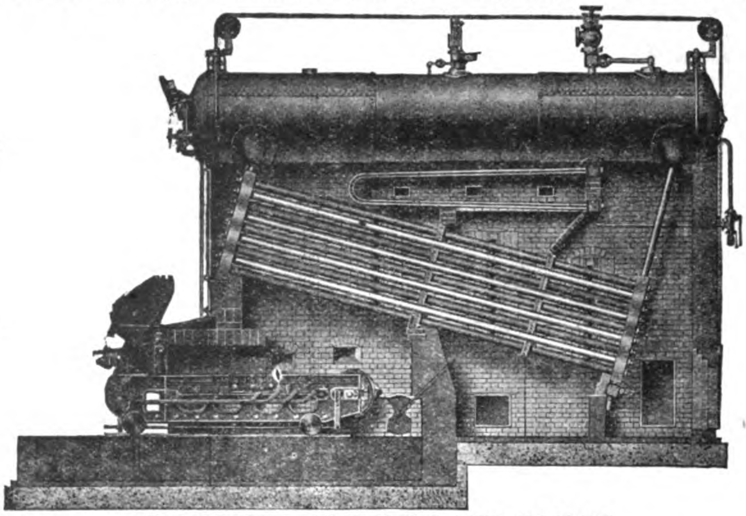

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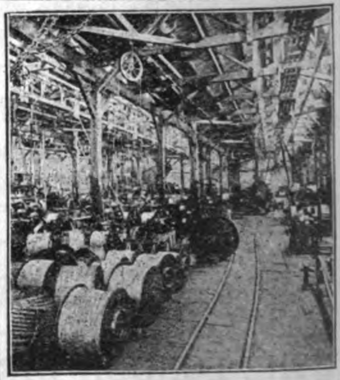

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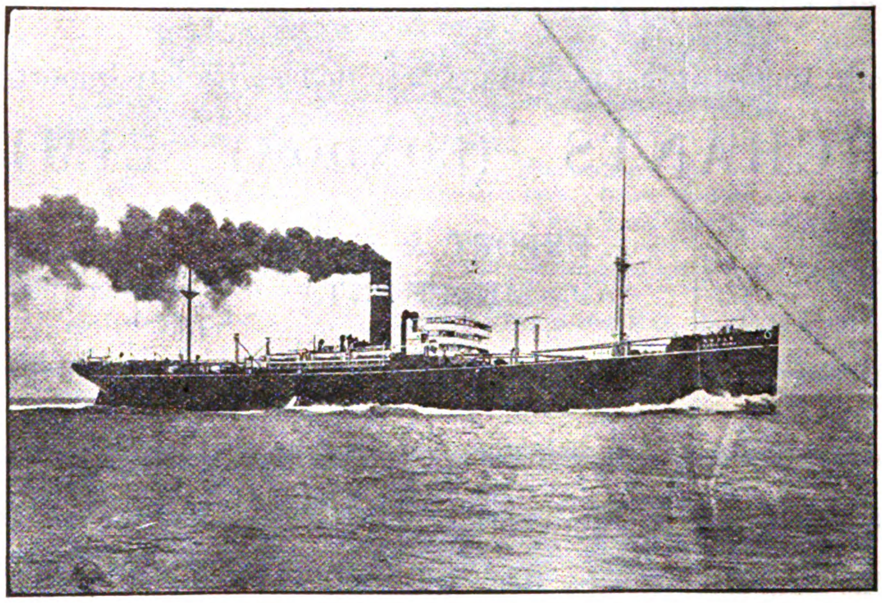

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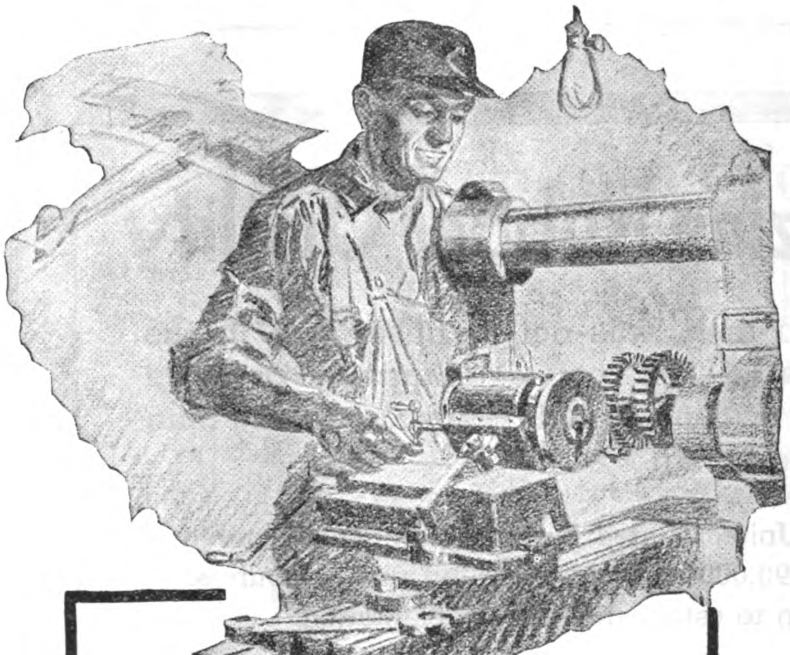

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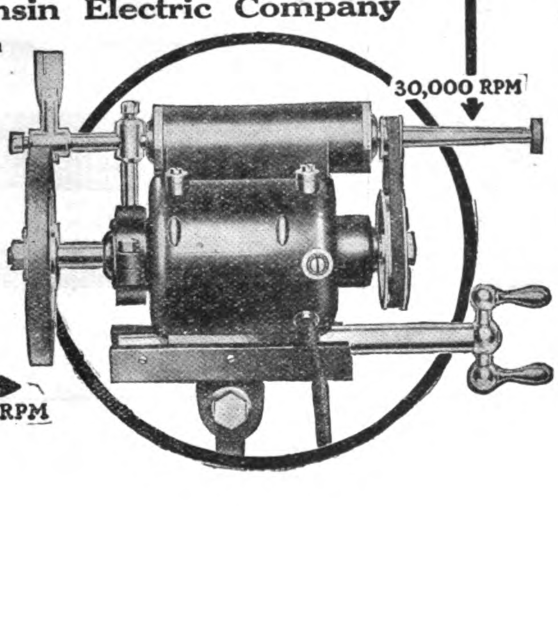

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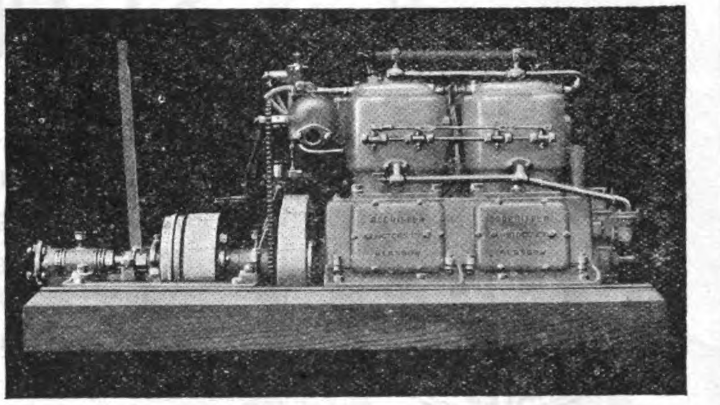

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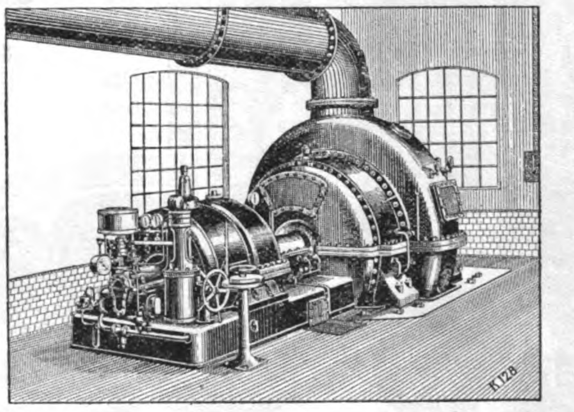

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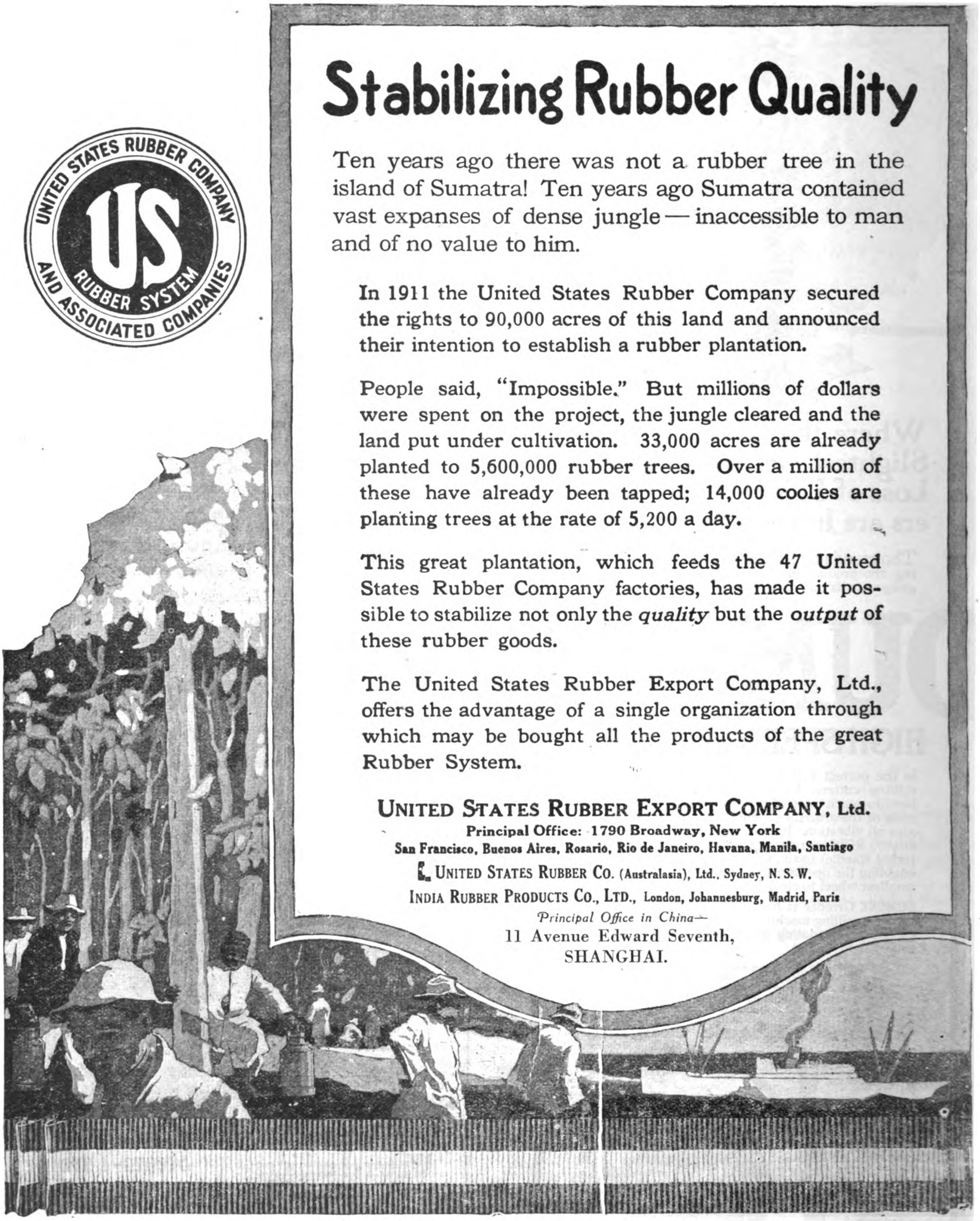
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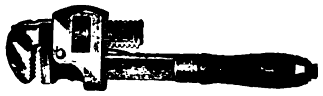

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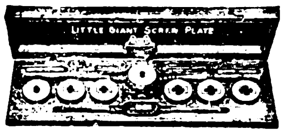

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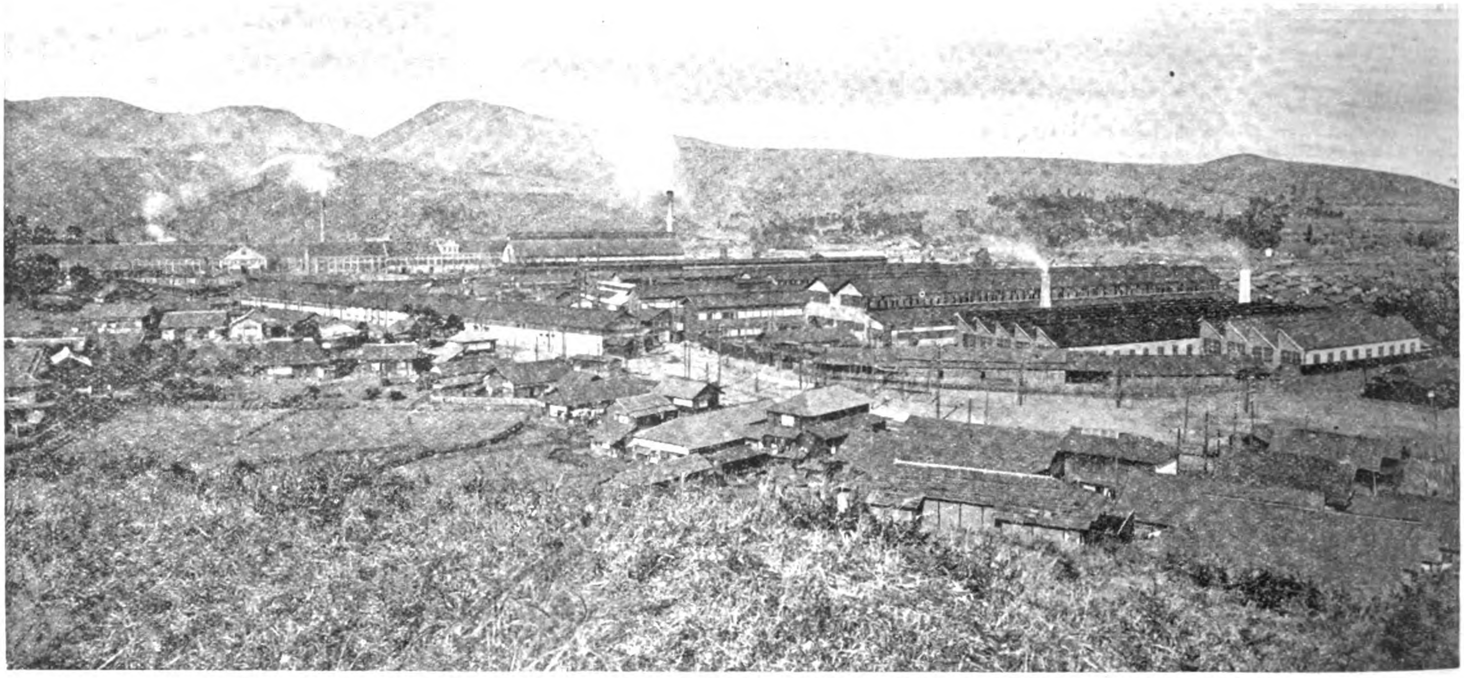

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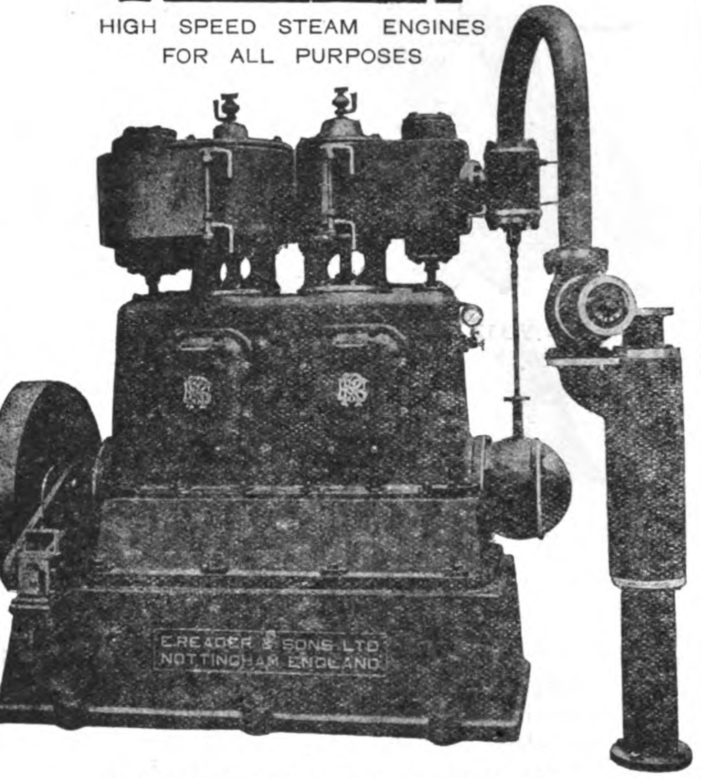

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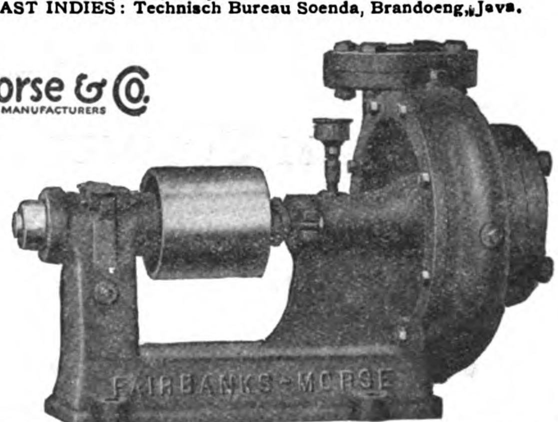

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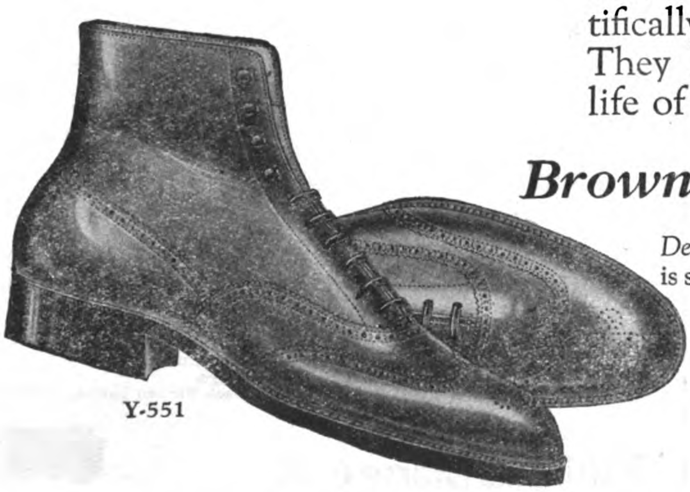

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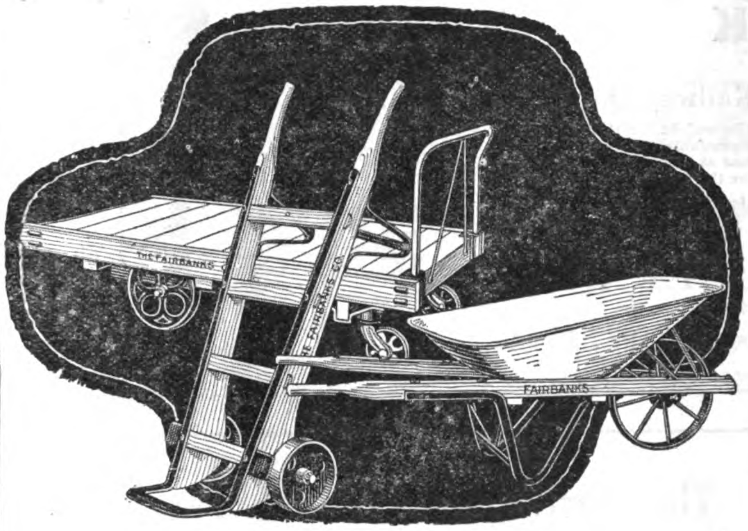

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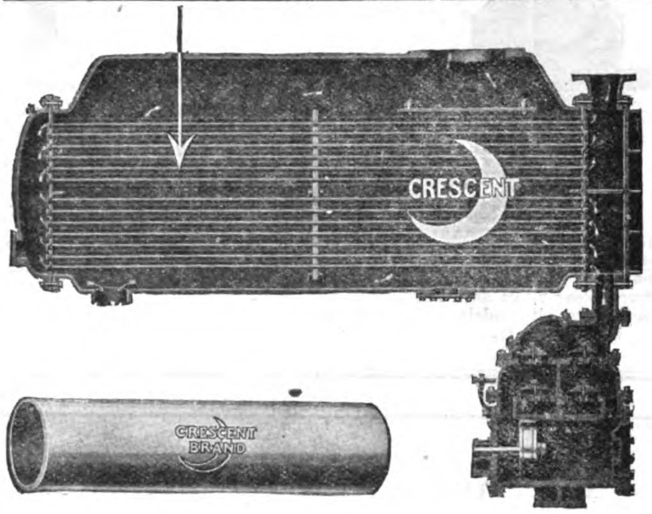

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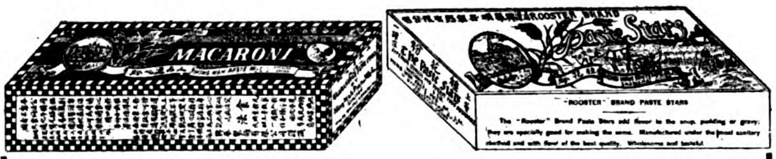

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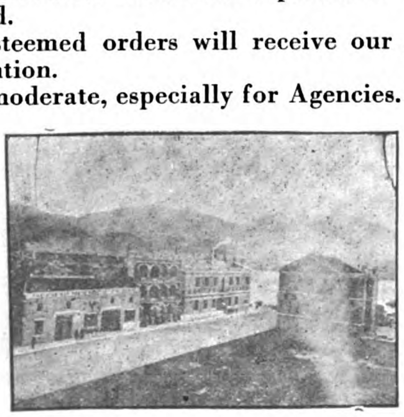

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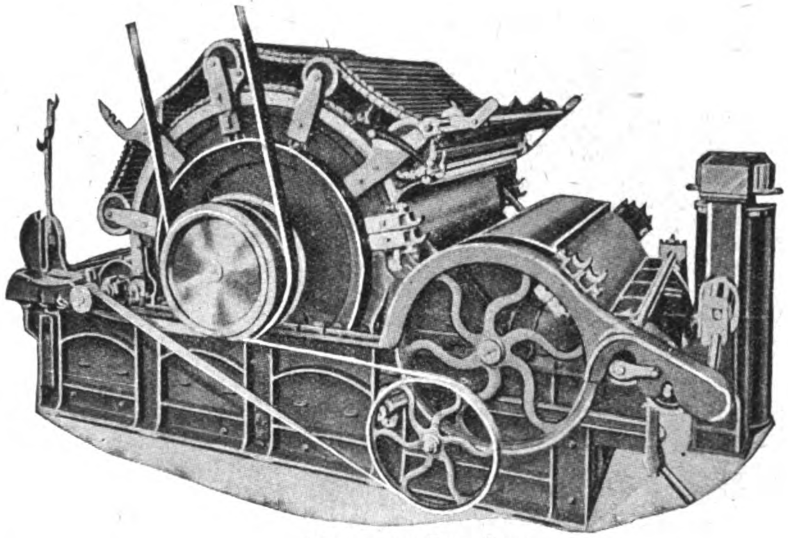

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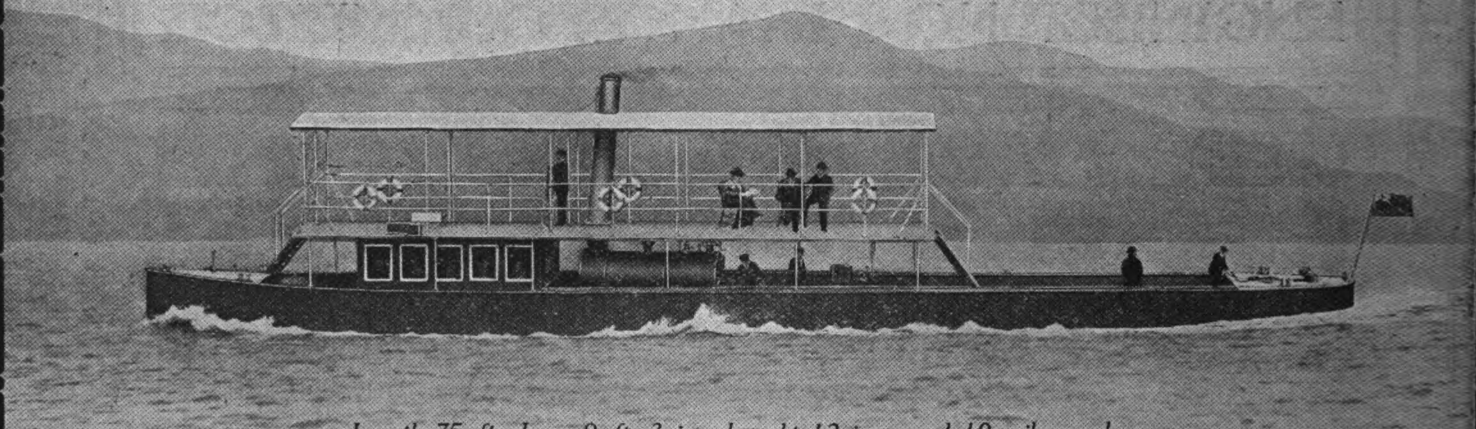

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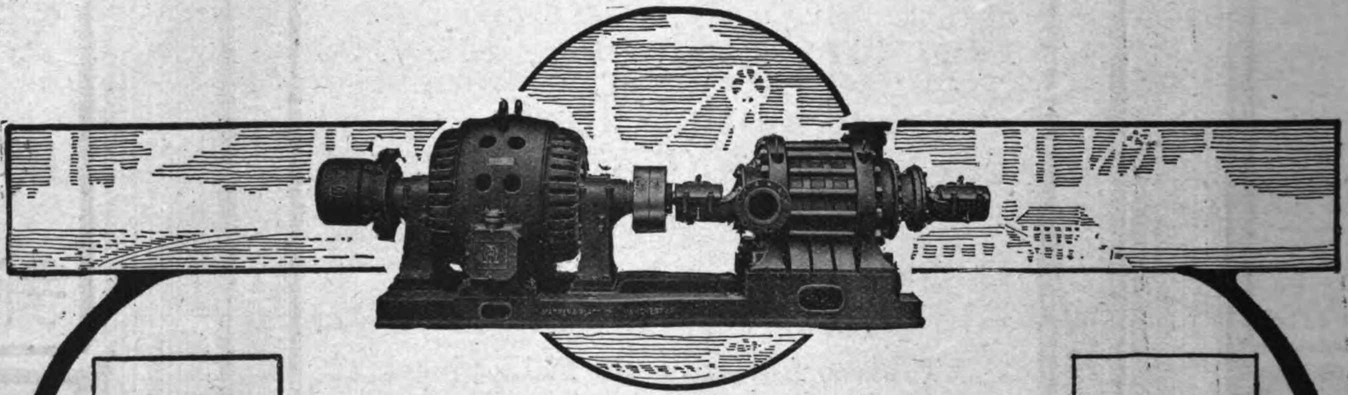

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CHINA

China (Chung Kuo) comprises China Proper (eighteen provinces), Manchuria, Mongolia, Sinkiang and Tibet.

Area and Population.—Accurate figures of area and population are impossible to secure. It is generally accepted that the total area is between 4,278,352 and 4,376,000 square miles. The area of China Proper—that is, the provinces of Chihli, Shantung, Shansi, Shensi, Honan, Kiangsu, Kiangsi, Anhwei, Chekiang, Fukien, Hupeh, Hunan, Kansu, Szechuan, Kuangtung, Kuangsi, Kweichow and Yunnan—is set down at 1,532,815 square miles. Its length from north to south is 1,860 miles, and its breadth 1,520 miles.

The estimated population of China Proper ranges from 271,770,000 (331,000,000 is the Mingchengpu census of 1910) to 407,253,029. The generally accepted figure is that of the Mingchengpu census. The total population for the whole of China is estimated at between 342.6 millions and 448,000,000.

The Foreign Population in 1918, according to Customs reports, was as follows: American, 5,766; Austrian, 271; Belgian, 360; Brazilian, 16; British, 7,953; Danish, 475; Dutch, 377; French (including 918 proteges), 2,580; German, 2,651; Hungarian, 7; Italian, 535; Japanese, 159,950; Norwegian, 279; Portuguese, 2,417; Russian, 59,719; Spanish, 298; Swedish, 530; Non-treaty Powers, 343; total, 244,527. The figures of German and Austrian population in 1918 were greatly reduced by repatriation in 1919.

Government.—The Government of the eighteen provinces is entrusted to civil and military Governors, and under them each province is subdivided into circuits superintended by Taoyins or intendants, and again into districts. All the territorial officials are appointed by the Central Government, and the Provincial Governors, though free to act independently in many matters of local detail and finance, are responsible to the Central Government at Peking in all important questions, and especially in foreign affairs.

The Army.—The total strength in all forces after the rebellion in 1913 was estimated at 600,000. As various commanders recruit to suit their own purposes no accurate figures are available, but at the end of 1917 it is probable that 800,000 men were under arms.

The Navy.—This arm of the defense is out of date. China possesses two protected cruisers built in 1911 (2,756 tons), four older protected cruisers (4,300-3,000 tons), three torpedo gunboats (850 tons), eleven gunboats (750-550 tons), four destroyers (400 tons), and eight small torpedo boats (120 tons.)

Currency.—The standard currency in China is silver, its unit being the Tael, which is not a coin but a weight, its value varying considerably. In 1882, in Shanghai, the tael was worth 5s. 2d.; in 1892 the Haikwan Tael (the official Customs Tael) was worth 4s. 4½d.; on 1907, 3s. 3d.; in 1917, 4s. 3½; in 1918, 5s. 3$\frac{7}{16}$. Various silver dollars circulate, as well as copper cents, while cash is greatly used among the poorer classes and country people. The cash should weigh one-tenth of a tael and have the value of 1,000 cash to a silver tael, but this standard is never maintained. In 1882 a Shanghai tael (5s. 2d.) was equal to 1,690 cash, and in 1902 when the tael was worth 2s. 7¾d. it was equal to 1,240 cash.

Foreign Trade in China.—In 1918 the net value of foreign trade of China was the highest on record, the total being Hk. Tls. 1,040,776,113, an increase of Hk. Tls. 28,325,709 over that for 1917. Net imports of Hk. Tls. 554,893,082 compared with Hk. Tls. 549,518,774 in 1917; and exports of Hk. Tls. 485,883,031 compared with Hk. Tls. 462,931,630 in 1917.

Treaty Ports, Trading Ports, and Ports of Call.—There are forty-eight treaty ports in China, which are classified by the Chinese Maritime Customs as follows:

Northern Ports: Aigun, Sansing, Manchouli, Harbin, Suifenho, Hunchun, Lungchingtsun, Antung, Tatungkow, Dairen, Newchawng, Chinwangtao, Tientsin, Lungkow, Chefoo and Kiaochow.

Yangtse Ports: Chungking, Ichang, Shasi, Changsha, Yochow, Hankow, Kiukiang, Wuhu, Nanking and Chinkiang.

Central Ports: Shanghai, Soochow, Hangchow, Ningpo and Wenchow.

Southern Ports: Santuao, Foochow, Amoy, Swatow, Canton, Kowloon, Kongmoon, Samshui, Lappa, Wuchow, Nanning, Kiungchow and Pakhoi.

Frontier Ports: Lungchow, Mengtze, Szemao and Tengyueh.

Ports Opened to Trade are: In *Manchuria:* Mukden, Fakumen, Fenghwangcheng, Sinmintu, Teihling, Tungkiangtze, Yingkow (Newchwang), Liaoyang, Changchun, Kirin, Ninguta, Chuizuchien, Toutaokow, Tsitsihar, Hailar. In *Sinkiang:* Kashgar. In *Shantung:* Chow'sun, Tsinanfu, Weihaiwei, Weihsien. In *Kiangsu:* Woosung. In *Tibet:* Gartok and Gyangtze.

Ports of Call: For Passengers and Cargo: In *Kuangtung*—Kumchuk, Shuihsing, Pakto, Takhing, Lating, Dosing. In *Kiangsi*—Hankow. In *Anhwei*—Tatung, Anking. In *Hupeh*—Wusueh and Luk'kow.

For Passengers: In *Kiangsu*—Kiangyin, Icheng. In *Hupeh*—Hwangshihkang, Hwangchow. In *Kuangtung*—Fengtsun, Kaukong, Yutshing, Lukpa, Howlik, Loto, Maning, Yungyan, Kulo and Jungki.

Railways.—Government railways in operation .. .. 3,793 miles
Concessioned railways in operation .. .. 1,847 „
Private railways in operation .. .. 150 „

Total railways in operation .. .. 5,790 miles

Government railways under construction are about 330 miles.

Weights and Measures.—1 Tael (*Liang*)—583.3 grains (1⅓-oz. avoirdupois) =37.783 grams.

16 Taels—1 Catty (*Chin*)—1⅓-lb. avoirdupois—604.53 grams.

100 Catties—1 Picul (*Tan*)—133⅓-lb. avoirdupois—60.453 kilograms=147.67 Russian pounds.

Length: 1 Chih—14.1 inches or 0.358 metres.

1 Li—about one-third of a mile (or theoretically 2,115 feet, or two-fifths of a mile).

Area: 1 Mow (Shanghai)=one-sixth of an English acre.

Capacity: 1 Tow (for tribute)=629 cubic inches (10.31 liters).

River.—The Yangtze-kiang is 3,200 miles in length. It rises in Tibet and drains some three-quarters of a million square miles of country. It is navigable for large steamers to Hankow (600 miles from the sea), for slightly smaller vessels to Ichang (1,000 miles), for small steamers and steam-launches for 300 miles farther, and for junks for 200 miles farther; or a total distance of half its length is available for the transport of merchandise. The river was opened to foreign trade by the Treaty of Tientsin (1858).

The Yellow River, or Huang-ho, rises about 100 miles from the source of the Yangtze. It is from 2,500 to 2,700 miles long, but is navigable only by junks, the vast quantities of silt carried by it and deposited in its channel rendering steam navigation impossible.

The Sikiang, or West River, rises in Yunnan and reaches the sea by several months near Canton. Its length is about 1,000 miles. Steamers go as far as Wuchow, some 220 miles from Canton and launches some 200 miles farther. Junks navigate it to near its source.

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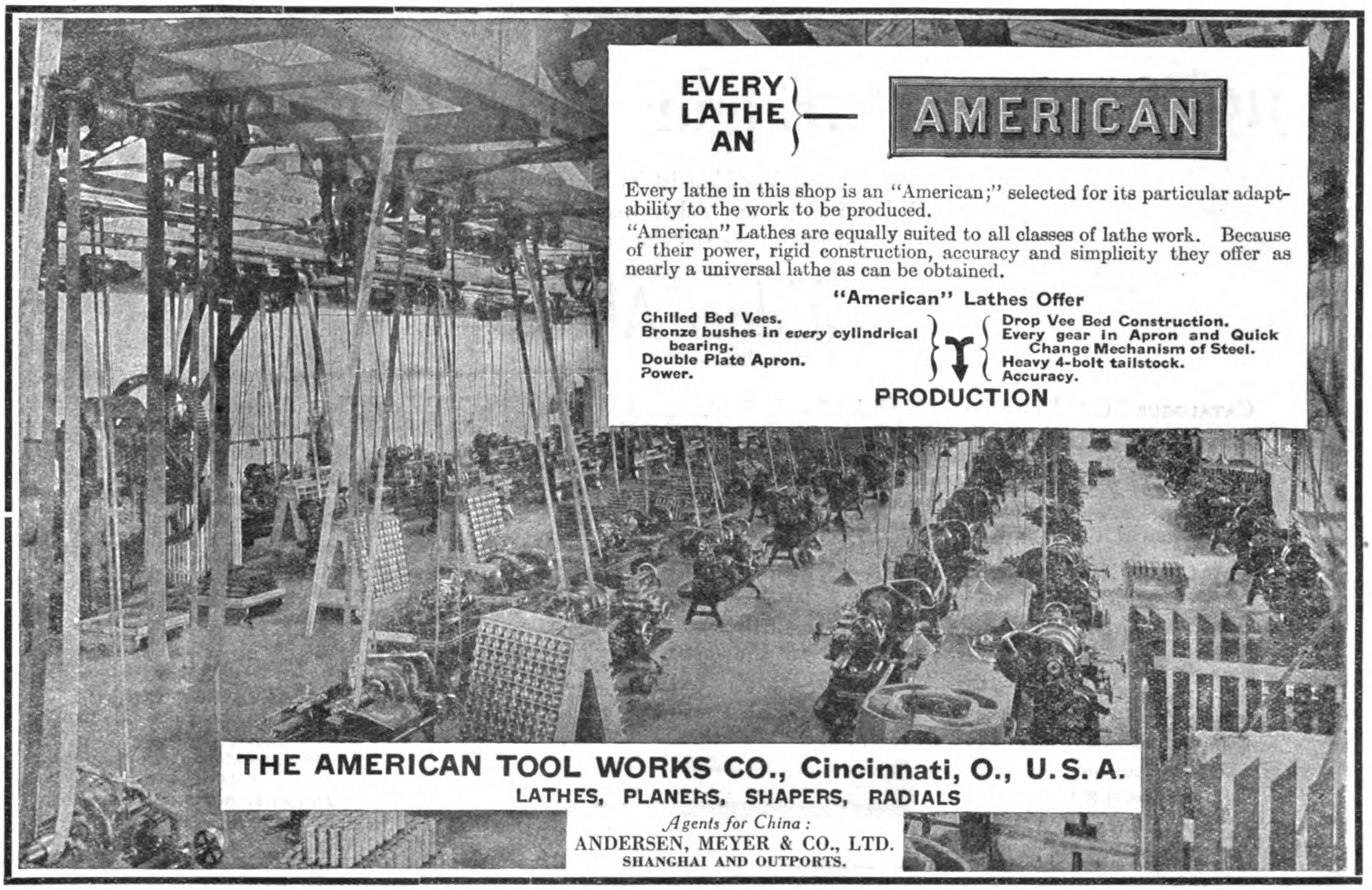

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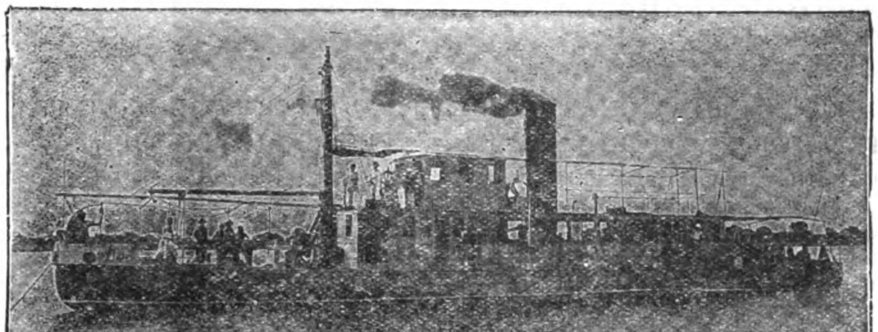

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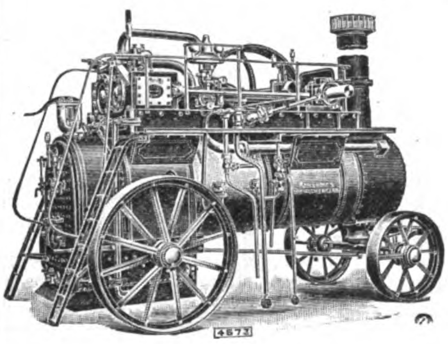

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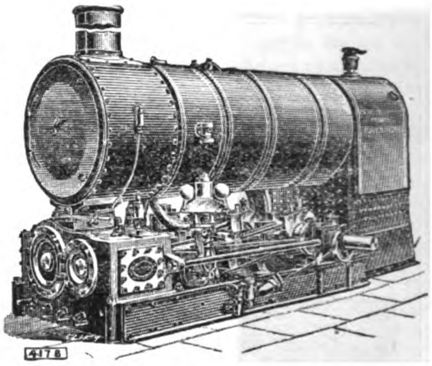

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Local Bills Discounted. Credits granted on approved Securities and every description of Banking and Exchange business transacted. Drafts granted on London and the chief commercial places in Europe, India, Australia, Africa, China, Japan and America.

G. H. STITT, *Acting Manager.*

Banque Industrielle de Chine

CAPITAL............Francs 75,000,000, one-third of the Capital, i.e., Frs. 25,000,000, subscribed by

THE GOVERNMENT OF THE CHINESE REPUBLIC

Statutes approved by the Government of the Chinese Republic on January 11, 1913.

President: ANDRE BERTHELLOT.
General Manager: A. J. PERNOTTE.

HEAD OFFICE:

74 RUE ST. LAZARE, PARIS.

Branches in Peking, Tientsin, Shanghai, Hongkong, Canton, Foochow, Saigon, Haiphong and Yunanfou

Bankers:

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In London: London City & Midland Bank Ltd.
In New York: Redmond & Co.
In Italy: Banca Commerciale Italiana Credito Italiano

Taels, Dollars, Gold Accounts

Interest allowed on Current Accounts in Gold or Local Currency and fixed deposits on application.

Every description of Banking and Exchange business transacted.

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RUSSO-ASIATIC BANK

CAPITAL (fully paid)	**Roubles 55,000,000**
RESERVE FUND	**„ 26,960,000**
Capital contributed by the Chinese Government ...	**Kuping Tls. 3,500,000**
Reserve Fund	**„ 1,750,000**

Head Office: PETROGRAD
Paris Office: 9 RUE BOUDREAU
London Office: 64 OLD BROAD STREET, E.C. 2.

Bankers:

LONDON: Messrs. Glyn, Mills, Currie & Co.
PARIS: Société Générale pour favoriser le développement du Commerce et de l'Industrie en France.
Banque de Paris et des Pays-Bas.
LYONS: Société Générale pour favoriser le développement du Commerce et de l'Industrie en France.
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Branches and Agencies in Russia, Siberia and Mongolia.

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Local Bills discounted. Special facilities for Russian Exchange.
Foreign Exchange on the principal cities of the world bought and sold.

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L. JEZIERSKI, S. JASTRZEMBSKI, } *Managers for Branches in Asia.*

BANK OF COMMUNICATIONS

(Specially authorised by Presidential Mandates of April 7th, 1914 and October 31st, 1915 making the Bank of Communications a National Bank).

Head Office: Peking

CAPITAL . . Kuping Tls. 10,000,000

President: TSAO JOU LIN

Vice-President: JEN FUNG PAO

Every description of Banking and Exchange business transacted.
Interest allowed on Current Accounts and Fixed Deposits according to arrangement.
Credits granted on approved Securities.
Special Facilities for Transfers to all parts of China.

Branches

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SHANTUNG PROVINCE.—Tsinanfu, Tsininchow, Chefoo, Techow, Tsaochwang, Lungkow.

HONAN PROVINCE.—Kaifeng, Lohyang, Chengchow, Chiaotso, Chowchiakow, Taokow, Leiho, Hsinhsiang, Changtefu, Hsinyangchow.

SHANSI PROVINCE.—Shihchiachwang, Tatungfu, Fengcheng, Yangkao.

KIANGSU PROVINCE.—Shanghai, Soochow, Wusieh, Chinkiang, Yangchow, Tsing-kiangpu, Pukow, Penpu, Hsuchow.

CHEKIANG PROVINCE.—Hangchow, Ningpo.

HUPEH PROVINCE.—Hankow, Shasi, Ichang.

KIANGSI PROVINCE.—Kiukiang.

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SZECHUAN PROVINCE.—Chungking.

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KWANGTUNG PROVINCE.—Canton.

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The Yokohama Specie Bank, Limited

Capital subscribed . . Yen 100,000,000. Capital paid-up . . Yen 61,000,000. Reserve Fund . . Yen 44,000,000

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Vice-President:
S. K. Suzuki, Esq.

Directors:
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K. Tatsumi, Esq.
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K. Kodama, Esq.
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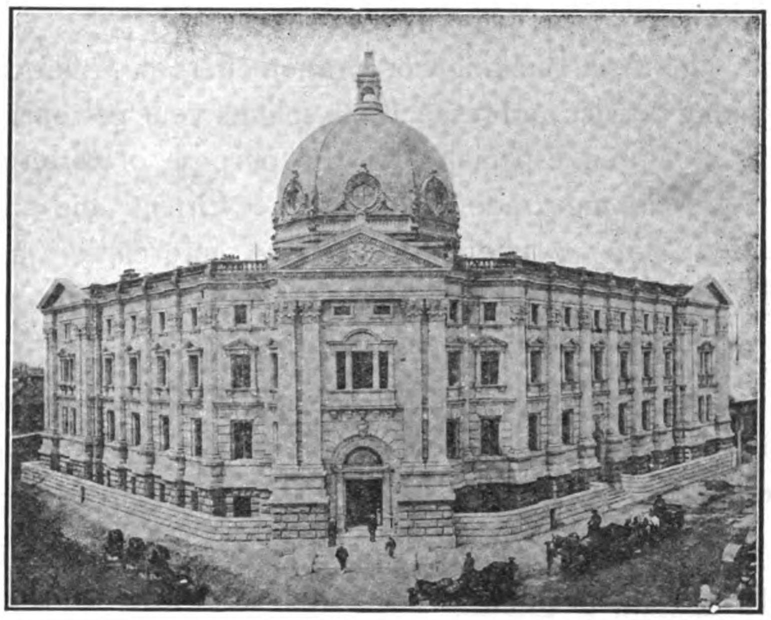

General Manager:
S. K. Suzuki, Esq.

HEAD OFFICE, YOKOHAMA

Manager:
Taro Hodsumi, Esq.

SHANGHAI BRANCH

31 The Bund.

Director and Manager:
K. Kodama, Esq.

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Buenos Aires
Calcutta
Changchun
Chinan Fu
Dairen
Fengtien
Hankow
Harbin
Hongkong
Honolulu
Kaiyuang
Kobe
London
Los Angeles (sub-office of San Francisco Branch)
Lyons
Manila
Nagasaki
Newchwang
New York
Osaka
Peking
Rangoon
Rio de Janeiro
Saigon
San Francisco
Seattle
Shanghai
Shimonoseki
Singapore
Soerabaya
Sydney
Tientsin
Tsingtau
Tsinan
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LONDON COUNTY WESTMINSTER & PARR'S BANK LTD.
LONDON PROVINCIAL & UNION BANK OF ENGLAND LTD.
LONDON JOINT STOCK BANK LTD.

Interest allowed on Current Accounts and Fixed Deposits on terms to be ascertained on application.
Every description of Banking business transacted. For particulars, apply to the Managers.

Asia Banking Corporation

An American Bank

The Asia Banking Corporation offers an American Banking Service and respectfully solicits your patronage. It is organised especially for the purpose of fostering and developing trade between the Orient and the United States. The entire service, information and TIME of our bank, its staff and correspondents are at the disposal of our clients and their friends.

Interest allowed on current, fixed and saving accounts carried in Taels, Mexican Dollars, U.S. Gold, Sterling and Francs.

Foreign or local drafts purchased at best rates, or entered for collection.

Imports and exports financed.

Drafts sold on, and telegraphic payment effected in, any part of the World.

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PORTO RICO—San Juan, Mayaguez and Ponce. **HAITI**—Port-au-Prince.

DOMINICAN REPUBLIC—S. Domingo, Puerto Plata, Sanchez, S. Pedro de Macoris and Santiago de los Caballeros.

MARTINIQUE—Fort de France.

QUADELOUPE—Pointe-à-Pitre and Basse Terre.

BRITISH WEST INDIES— Antigua, Bahamas, Barbados, Dominica, Grenada, Jamaica, Montserrat, Nevis, St. Kitts, Trinidad and Tobago.

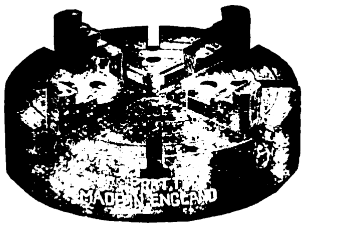
BRITISH GUIANA—Georgetown, New Amsterdam, &c.

BRITISH HONDURAS—Belize.

CAPITAL PAID UP & RESERVES $35.000,000
TOTAL RESOURCES OVER - - $500,000,000

PRATT CHUCKS

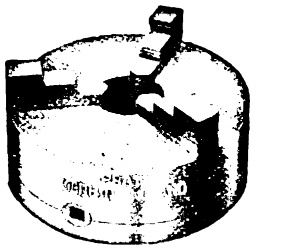
MADE IN ENGLAND



INDEPENDENT 4-JAW CHUCKS

Reversible Jaws and Solid Bodies. Screws have Double-Thrust Bearings
(10 inch size and upwards)

STANDARD SIZES: 4½, 5, 6, 8, 9, 10, 12, 14, 15, 16, 17, 18, 20, 22, 24, 26, 28, and 30 inches diam.



3-JAW GEARED SCROLL CHUCKS

SELF-CENTRING

Sizes in Progress:
5, 6, 7½, 9 and 10½ inches diam.
Full range of sizes to follow.

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MANUFACTURED BY

F. PRATT & CO., LTD.,

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London Offices:

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TINPLATE BARS.
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SPRING STEEL ,,
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BILLETS.
SLABS.
FLATS.
SLEEPERS.

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FISHPLATES.
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(Joint Proprietors of John Lancaster & Co.'s Griffin Nantyglo, Powell's Tillery and Powell's Navigation Steam Coals).

STEEL SHEETS, Black and Galvanized, Plain and Corrugated.

Makers of SPECIAL STEEL PANEL PLATES hydraulically flattened and resheared to exact dimensions. Other STEEL SHEETS to Special Analyses. Brands: "E.V." "Furnaces," "Napoleon."

WELDLESS STEEL TUBES FOR LOCOMOTIVE BOILERS.
STANDARD SIZES AND GAUGES. WELDLESS COUPLINGS.

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WAGON ,,
LOCOMOTIVE ,,
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GENERAL CASTINGS (UP TO 40 TONS).
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BEST QUALITY TAR, and Sulphate of Ammonia produced by Direct Recovery Process.

Coal Output Capacity	**3,500,000 Tons per annum.**
Pig Iron ,, ,, ...	**300,000 ,,**
Steel ,, ,, ...	**250,000 ,,**

(Bessemer & Siemens Acid and Basic.)

Brick Output Capacity ... ... **20,000,000 per annum**

(Buff and Red Facings, Fire, Common and Ornamental.)

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STEAM
AND
ABERCARN
BLACK VEIN
COAL.

THE EBBW VALE STEEL IRON AND COAL COMPANY, LIMITED.

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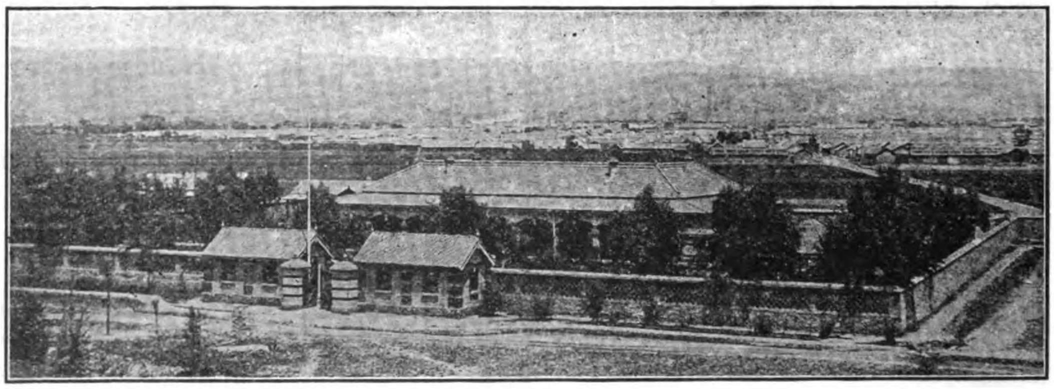
CHINESE GOVERNMENT RAILWAYS

The Tao-Ching Railway

TAOKOU TO CHINGHUA

(CHINESE GOVERNMENT HONAN LINE)

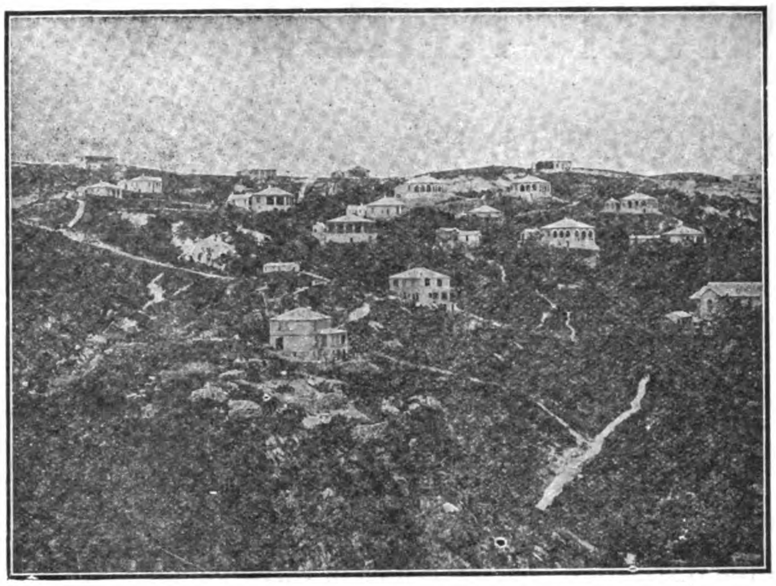


A VIEW ON THE TAO-CHING RAILWAY, WITH MINE IN DISTANCE.

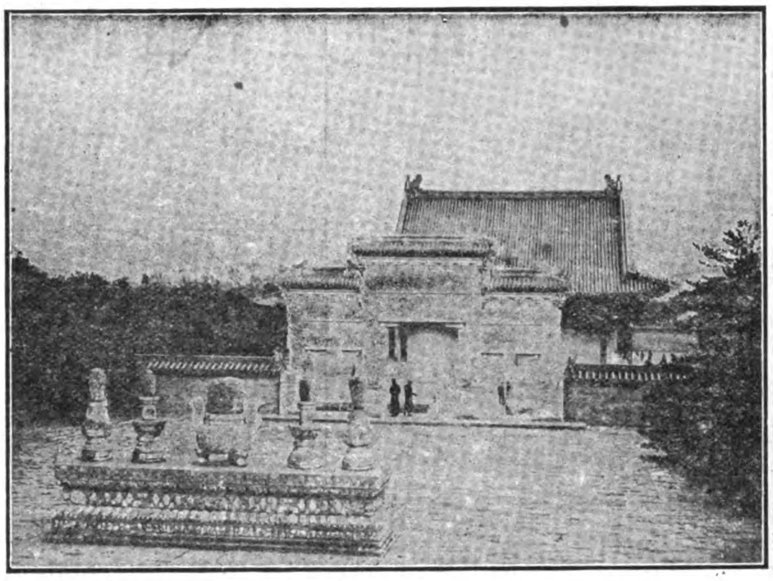
"CHINA'S ROAD OF ANTHRACITE"

The trains of this line connect at Sin-Siang-Sien with the through service of the Peking-Hankow Railway. It taps the great Anthracite Coal Deposits of Shansi, and conveys the products of the Mines to the nearest navigable river.

CHINESE GOVERNMENT RAILWAYS



SUMMER RESORT AT CHI KUNG SHAN



TOMB OF EMPEROR YU CHENG NEAR LIANG KOW CHWANG

PEKING-HANKOW LINE

"The Road Through The Heart of China"

THE Peking-Hankow Line, the most important section of China's overland route, enables tourists and travellers to get a glimpse of Old China, the train passing through magnificent scenery, traversing the great plains of Chihli, the central portion of Honan and the mountainous regions of the eastern Hupeh province.

The Peking-Hankow route joins at Fengtai the main line of the Peking-Mukden Railway, by means of which this line is connected with the railways in Manchuria, Korea, Japan, and Siberia, while steamer facilities at Hankow bring it into easy communications with the Yangtze River ports and Shanghai.

From the Capital to Hankow the journey occupies 34 hours, by the daily through train which is provided with up-to-date sleeping and dining accommodations.

Chikungshan Mountain (Summer Resort).—Not many Summer Resorts in China inland, can bear comparison with the natural charming views, that reward those who ascend the mountain of Chikungshan, whose summit stands at an altitude of 1,980 ft. On reaching Sintien station, situated 110 miles from Hankow, a serpentine road climbs the mountain, on top of which are hundreds of beautiful bungalows awaiting vacationists. This popular resort is celebrated for its scenery, where an almost unbroken communion with nature can be enjoyed for a week at a time.

Hsi-ling or Western Imperial Tombs.—With their present-day accessibility, there is now little excuse for visitors to Peking omitting a trip to the Western Imperial Tombs, undoubtedly one of the most impressive sights in China. The site of these beautifully adorned Imperial Tombs is close to Liang Ko Chwang station, 79 miles from Peking, which is reached by a Branch-line, formerly built for the exclusive use of the Imperial Sovereigns when visiting the Tombs of their ancestors. The Western Tombs include the mausoleums of four Manchu Emperors and three Empresses, as well as those of a number of Princesses. The region, as a well laid-out park, closely wooded, is justly appreciated for the charming scenery surrounding the Imperial Tombs and is highly recommended to any one in search of the extraordinary and beautiful.

For Particulars, Pamphlets, Tickets, etc., apply to the "Information Bureau" at Peking Head Office or to Tourist Agencies.

SOUTH MANCHURIA RAILWAY

MANCHURIA AND CHOSEN LINES

Circular and Overland Trips at Greatly Reduced Rates

TOURIST TRAVEL OFF THE BEATEN TRACK

Tourists in the Far East should not miss Manchuria. Through Japan, Chosen (Korea), and Manchuria (or vice versâ) is an ideal trip, combining the distinctive characteristics of three unique and profoundly interesting countries.

The Chosen and Manchuria Lines are under the management of the South Manchuria Railway Company. Express trains have been temporarily suspended (except between Fusan and Seoul), but the Ordinary Trains are equal to most American Trains, run at least three times a day from each end, and to some of them Sleeping and Dining Cars are attached. Sleeping berths should be reserved in advance.

Hotels under the Company's management are established on foreign lines at SEOUL (capital of Chosen), FUSAN and SHINGISHU (the two extremities of Chosen), KONGOSAN (the famous Diamond Mountain of Korea, rivalling Switzerland in scenery), MUKDEN (ancient capital of China, home of the Manchuria Dynasty, noted for Imperial Palaces and Tombs), CHANGCHUN (junction for three railways and "key to Manchuria"), PORT ARTHUR (of world-wide fame for its historic sieges and ruined forts), DAIREN (one of the greatest commercial cities in the Orient), and HOSHIGAURA (the finest seaside resort in North China).

From Dairen there are frequent and regular steamers to and from Shanghai, Tsingtao, Tientsin, etc.

For pictorial guide-books, pamphlets, and further particulars, apply to the Tourist and Ticket Agencies, or direct to the

SOUTH MANCHURIA RAILWAY COMPANY

Head Office: DAIREN

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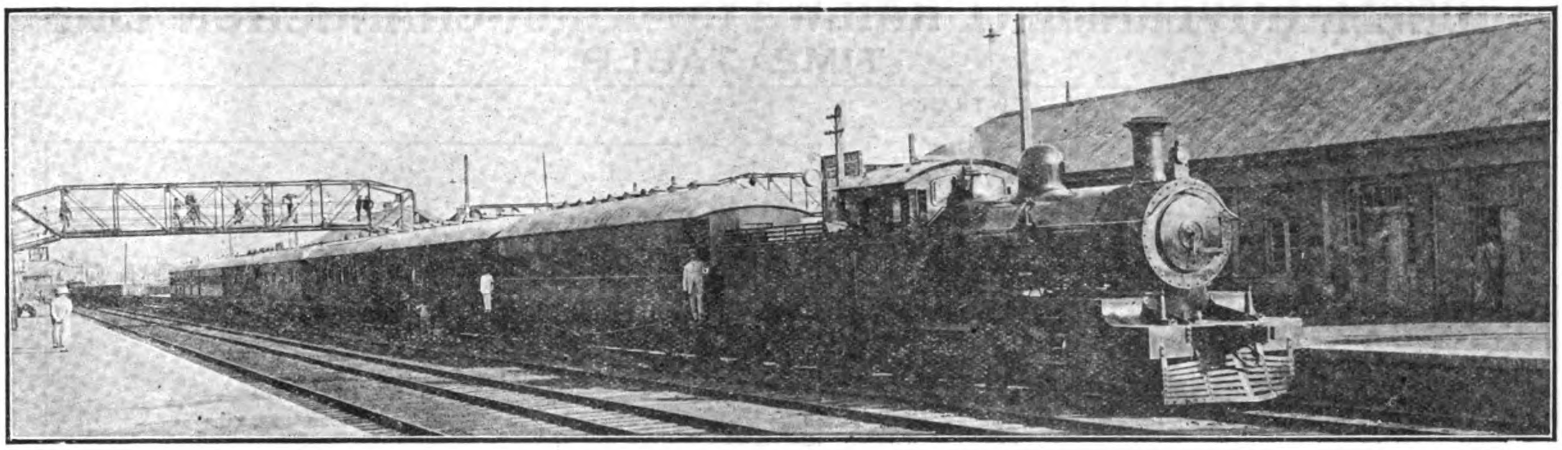
Telegraphic Address: MANTETSU. Codes: A.B.C. 5th Edition, and Lieber's

CHINESE GOVERNMENT RAILWAYS



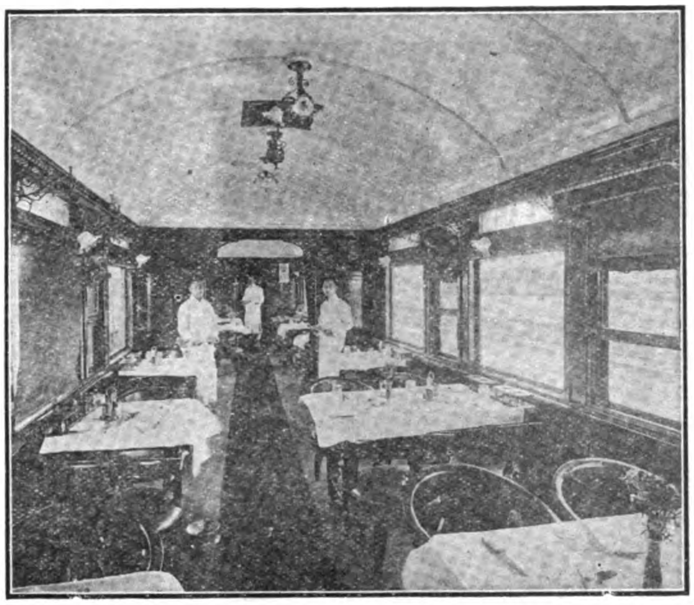
TRAIN DE LUXE AT TIENTSIN EAST STATION

The Peking-Mukden Line

Through service from Peking to Mukden, connecting at Mukden with the South Manchuria Express from Trans-Siberian Route. At Peking connection is made with the Peking-Hankow Railway for Hankow and Yangtze Ports, and Intermediate Points reached by the Chen-Tai Line to Taiyuanfu, the Tao-Ching Line, and the Pienlo Railway to Kaifengfu and Honanfu. Connection is also made at Peking with the picturesque Kalgan Line, "The road to the Great Wall." At Tientsin (Central) connection is also made with the Tientsin-Pukow line for Tsinanfu and Shanghai.

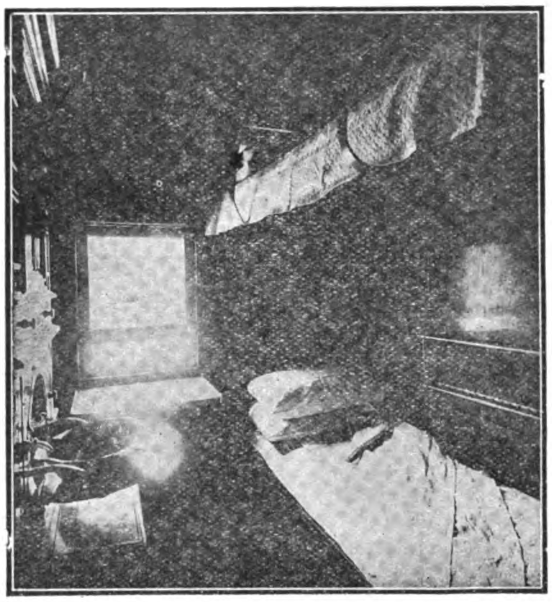
THE RAILWAYS OF NORTH CHINA PASS THROUGH THE MOST INTERESTING PART OF CHINA

PEKING.—The Capital, with the Walls, Palaces, Temples and Tombs.—**TIENTSIN.**—The Great Trade Centre of North China.—**TONGSHAN.**—The Largest Mining and Industrial Town in the Country.—**SHANHAIKWAN.**—Where the Great Wall ends at the sea.—**NEWCHWANG.**—The Busy Commercial Port of Manchuria.—**MUKDEN.**—The Ancestral home of the Manchu Dynasty. A Miniature Peking, with its Walls, Imperial Palaces, Temples and Tombs.



DINING CAR ON TRAIN DE LUXE

The through trains are equipped with Buffet and Dining Car Service. A Comfortable, Modern Train De Luxe of Compartment Sleeping Coaches is operated in connection with the through service of the Trans-Siberian and South Manchurian Railways.



FIRST CLASS SLEEPING BERTH, TRAIN DE LUXE

Through tickets to London and other places in Europe can be obtained at Peking and Tientsin from which stations passengers' luggage can be registered through to destination. Through tickets are issued and passengers' baggage registered through between the important Stations on the Peking-Mukden Railway and the South Manchuria Railway, Chosen (Korean) Railway and Imperial Government Railways of Japan.

For information regarding the many places of interest in China, Tourists will find "The Travellers' Handbook for China" with maps most useful. It is obtainable at any of the offices of Thos. Cook & Sons. The Chinese Government Railways Time Table book with Railway map can be had at any of the offices of Thos. Cook & Sons, and the International Sleeping Car Co., Hotels, Clubs and at all important Stations. Full particulars on application to any of the Stations or to the Traffic Manager of any of the Railways mentioned and on application to any office in America, Europe or the Far East of The Cie. International des Wagons-Lits, Thos. Cook & Sons, or

TRAFFIC MANAGER, CHINESE GOVERNMENT RAILWAYS (PEKING-MUKDEN), TIENTSIN.

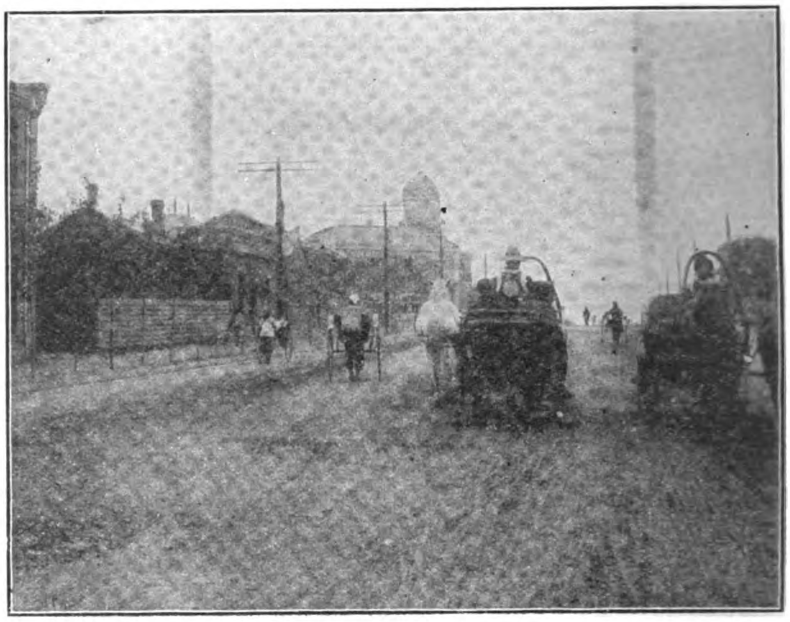
中華民國政府吉長鐵路行車時刻表

CHINESE GOVERNMENT RAILWAYS—KIRIN-CHANGCHUN LINE

TIME TABLE

DOWN TRAINS		STATIONS	UP TRAINS	
DAILY			DAILY	
MIXED	MAIL		MAIL	MIXED
P.M. 1.20	A.M. 8.30 d.	TOUTAOKOU	P.M. a. 6.00	A.M. 11.10
1.30 1.39	8.40 a. 8.42 d.	2.79 CHANGCHUN	d. 5.50 a. 5.45	11.00 10.56
2.14 2.19	9.12 a. 9.14 d.	12.69 KALUN	d. 5.15 a. 5.13	10.22 10.19
2.49 2.51	9.44 a. 9.45 d.	11.13 YINMAHO	d. 4.43 a. 4.42	9.46 9.40
3.07 3.09	9.58 a. 10.00 d.	5.38 HSIACHIUTAI	d. 4.29 a. 4.27	9.25 9.20
3.22 3.24	10.12 a. 10.13 d.	4.58 YINGCHENGTZE	d. 4.14 a. 4.13	9.07 9.05
3.51 3.55	10.35 a. 10.43 d.	9.14 TUMENLING	d. 3.53 a. 3.48	8.42 8.37
4.42 4.46	11.22 a. 11.24 d.	9.26 HUAPICHANG	d. 3 08 a. 3.06	7.51 7.47
5.07 5.08	11.37 a. 11.38 d.	6.46 KUTIENTZE	d. 2.52 a. 2.51	7.30 7.28
5.27 5.32	11.53 a. 11.55 d.	6.83 KIUCHAN	d. 2.37 a. 2.35	7.11 7.07
5.58	12.15 a.	8.30 KIRIN	d. 2.15	6.45

NOTICE:—"d" = Departure. "a" = Arrival. 25th November, 1917

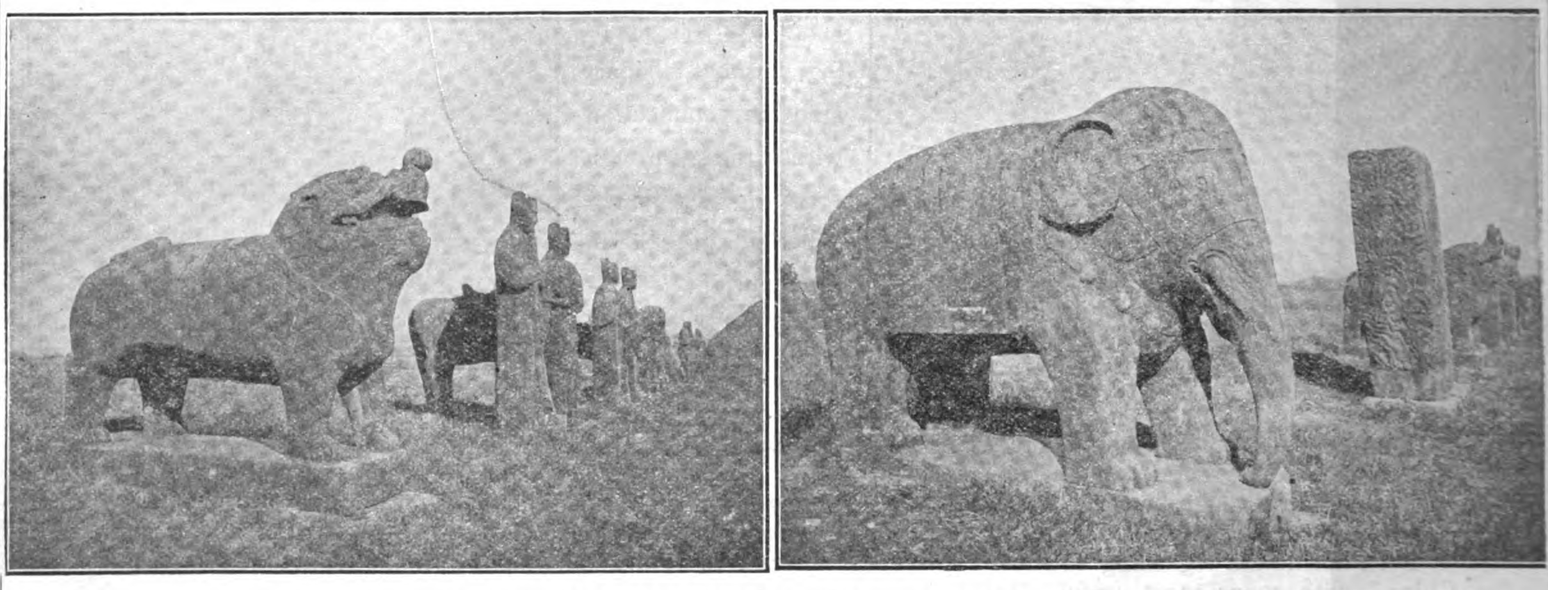


STREET SCENE, CHANGCHUN.

THE PIENLO RAILWAY

(Kaifeng-fu to Honanfu)

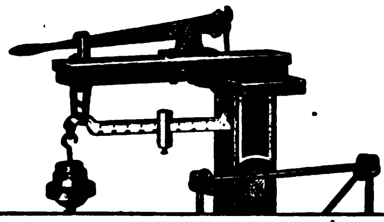
"THE FIRST SECTION OF THE PROJECTED CENTRAL TRUNKLINE"



THE SUNG TOMBS NEAR KAIFENG-FU ON THE PIENLO RAILWAY.

The line connects with the through service of the Peking-Hankow Railway at Tcheng Tchéou, enabling the traveller to visit Kaifengfu, the provincial capital of Honan, and the old capital of the Empire at Honanfu.

AVERY



you cannot recover losses

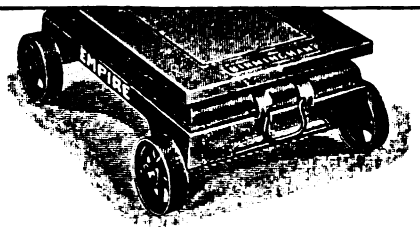
due to unintentional, unrecorded overweight deliveries, as you can an undercharge or overpayment.

Therefore accuracy in weighing is more important than in books and accounts.

A century's practical experience has enabled Avery's to embody in their machines, hundreds of wear-resisting and other improvements—mainly protected.

Hence Avery's are worth many times the total cost of ill-designed, "sluggish" weighing machines.

Prices and particulars from all leading Import Houses



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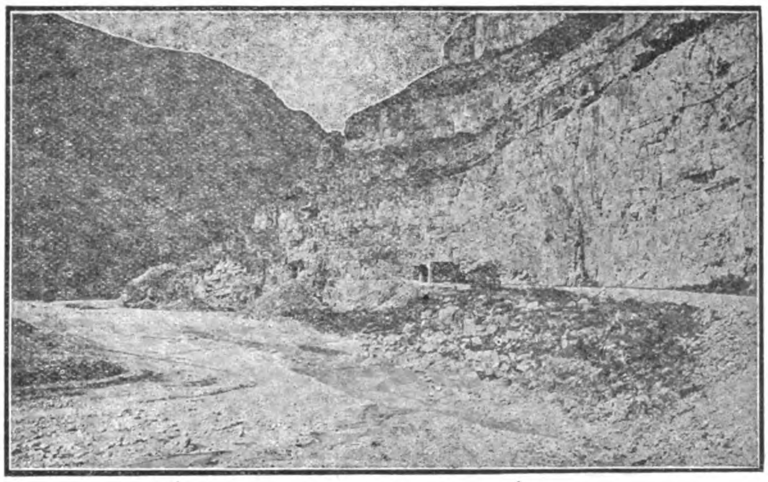
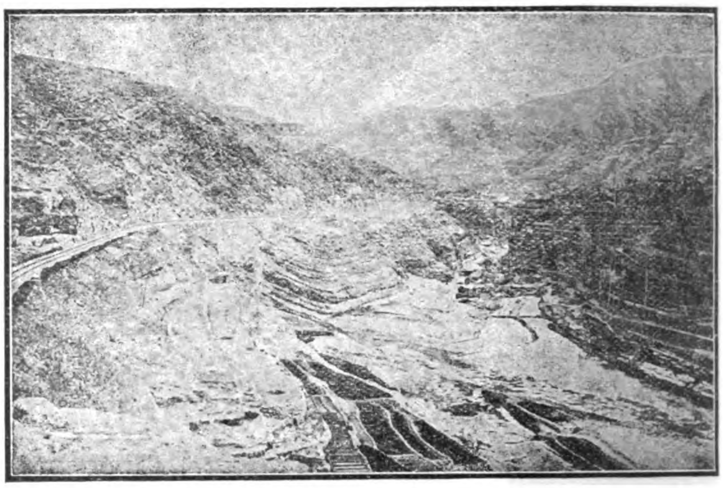
CHINESE GOVERNMENT RAILWAYS

CHENG-TAI RAILWAY

(Chinese Government Shansi Line—Chengtingfu to Taiyuanfu)



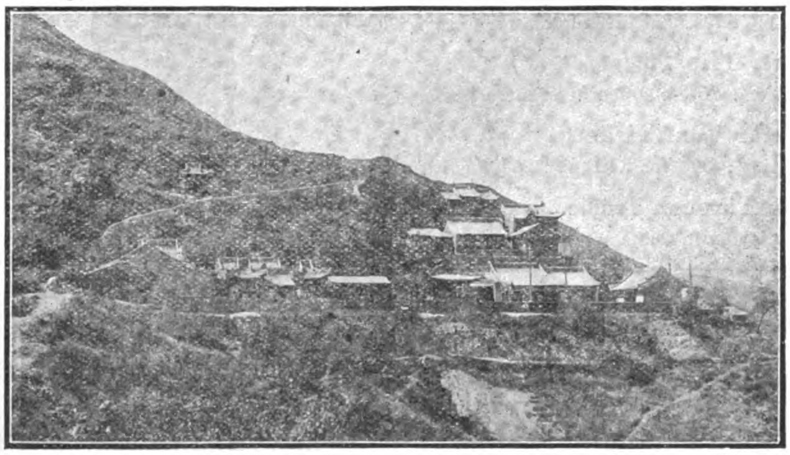


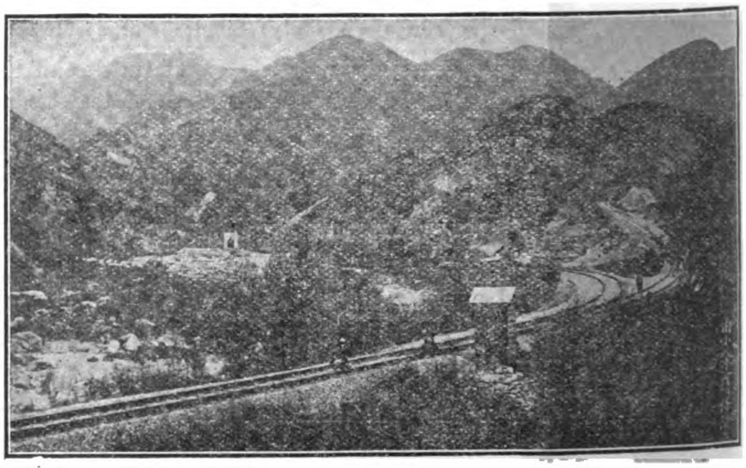
VIEWS ALONG ROUTE OF CHENG-TAI RAILWAY

The trains of this line connect with the through service of the Peking-Hankow Railway, affording Travellers the opportunity of seeing the most picturesque part of China. The line passes through a mountainous section of country, rich in Mineral Resources to the Provincial Capital of Shansi at Taiyuanfu. This interesting city is a great educational centre, and famous for the fine quality of its artistic embroideries.

PEKING-SUIYUAN LINE

"The Road to the Great Wall"

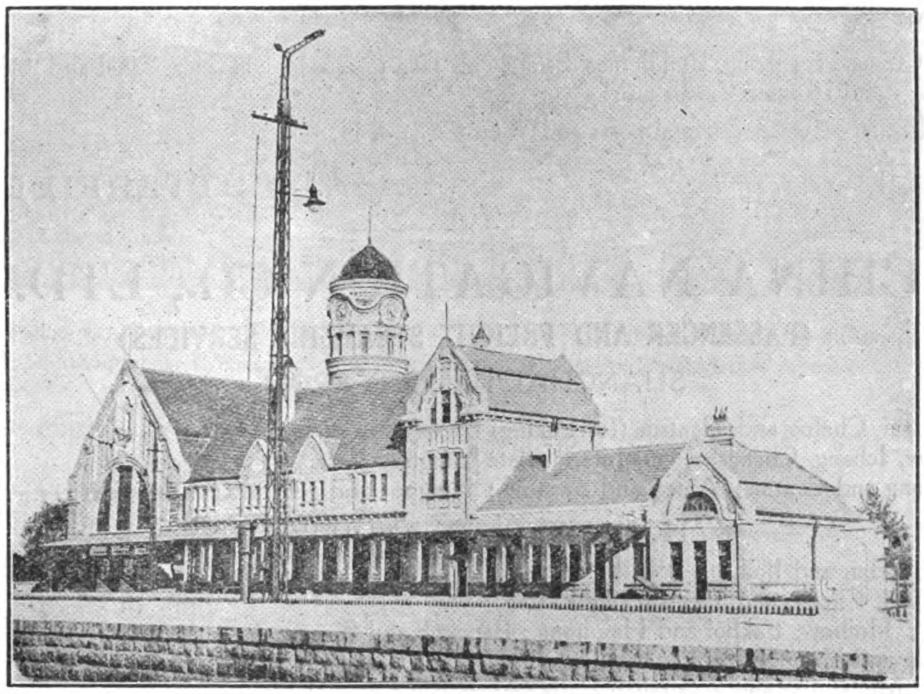




This line follows the ancient caravan route and military highway from Mongolia into China by the way of the historic Nankow Pass. This pass is the Key to Peking, and Kalgan is the gate of the Country. From here the great camel caravans set out on their long journeys across Mongolia to Siberia and Central Asia. This old frontier mart, retaining its time-honored characteristics, one of the most interesting sights of the Old World, is made accessible by the new railway. The line also carries the passenger in two hours from Peking to Nankow, when the Great Wall of China and the Ming Tombs may be seen. A foreign hotel is operated by the railway authorities at Nankow, where chairs and guides may be secured for the Tombs.

CHINESE GOVERNMENT RAILWAYS.

TIENTSIN-PUKOW LINE.



TSINANFU STATION.

THE above-named line, with its SOUTHERN end at PUKOW and NORTHERN end at TIENTSIN is having its through mail trains equipped with SLEEPING and BUFFET CARS running both ways every day. Comfortable seats and best meals are supplied on the trains. SANITARY ARRANGEMENTS are kept in perfect order and condition. A ferry steamer of modern type is provided for the conveyance of passengers across the river BETWEEN NANKING and PUKOW. Along this line travellers are afforded the opportunity of seeing the views of the country and many places of historic antiquities that will serve interest to the travelling observers. The time for the running of the trains are so scheduled as to make them CONNECT WITH the trains of the SHANGHAI-NANKING LINE on the southern terminus and those of the PEKING-MUKDEN LINE at the northern end. Travellers who intend to go to PEKING, KALGAN, TATUNG, MUKDEN, SOUTH MANCHURIA and SIBERIA or VICE VERSA are enabled to effect their journeys of a great distance at a very short space of time, it being considered the SAFEST and QUICKEST route for the travelling public.

For further particulars, please apply to:

THE HEAD OFFICE OF THE RAILWAY, TIENTSIN, the Agencies of Messrs. THOMAS COOK AND SON, the INTERNATIONAL SLEEPING CAR AND EXPRESS TRAINS COMPANY or the NORDISK RESEBUREAU.

Telegraphic Address: "TSINPURY" TIENTSIN. **Codes: A.B.C. 5th Edition.**

津浦路綫南達浦口北至天津每日均有快車往來並附掛臥車餐車食品精潔座次安舒關於衛生各事皆極講求南京浦口間近添設新式渡輪迎送旅客尤稱便利沿途風景名勝之區古蹟極多足資游觀者之心目且行車時刻南與滬甯北與京奉均相聯接凡欲至北京張家口大同及奉天南滿西伯利亞等處往來均可尅期而至行旅視爲坦途萬里達於旦夕有志游歷者所樂道也如有詢問事項天津津浦鐵路管理局或通濟隆洋行萬國臥車公司北方游歷公司等經理處均可通函

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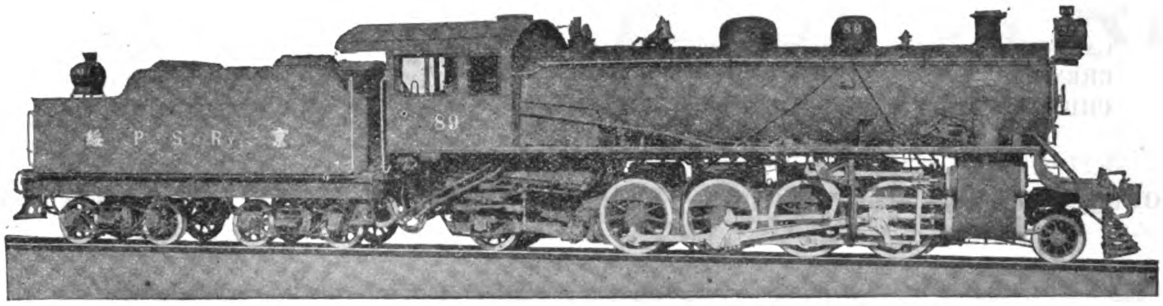
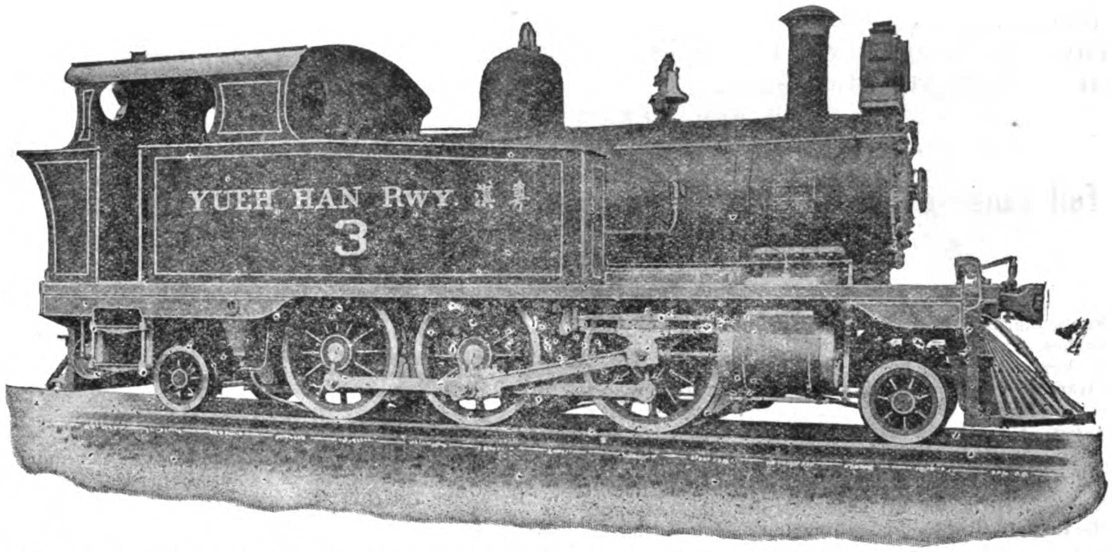
Locomotives for all Classes of Service



Total Weight of Engine, 187,500 pounds; Weight on Drivers, 139,000 pounds; Diameter of Drivers, 50 inches; Boiler Pressure, 180 pounds; Cylinders, 20 × 28 inches; Maximum Tractive Power, 34,300 pounds.

18 of these engines were delivered by this company to the Pekin-Kalgan Railways

The American Locomotive Sales Corporation, through its technical staff in China, or by writing to the head office, will be glad to co-operate to the fullest extent with the mechanical officials of the railways in the preparation of designs of locomotives to meet the present as well as the prospective requirements of the railways in China.



Total Weight of Engine, 98,800 pounds; Weight on Drivers, 72,700 pounds; Diameter of Drivers, 48 inches; Boiler Pressure, 180 pounds; Cylinders, 15 × 20 inches; Maximum Tractive Power, 14,340 pounds.

6 of these engines were delivered by this company to the Canton-Hankow Railway

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CABLE ADDRESS: LOCOMOTIVE, NEW YORK

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Sliding Surfacing and Screwcutting Lathes, Plain Lathes, High Speed Lathes, Axle Lathes, Toolroom Lathes, Surfacing and Boring Lathes, Vertical Boring Lathes, Cutting-off Lathes, Heavy Forge Lathes, Gun Lathes, Shafting Lathes, Break Lathes, Wheel Lathes, Relieving Lathes, Capstan, Turret and Brassfinishers Lathes of all types. Chucks and Self-opening Dieheads.

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Radial Vertical Drills of all sizes. Girder, Portable and Multiple-spindle Radials, Pipe-flange Drilling and Facing Machines, Ball-bearing Sensitive Multiple Drills and High-speed Drilling Machines.

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Plain, Vertical, Horizontal and Universal Milling Machines, Plano-Milling Machines, Keyway and Slot Drilling Machines, Thread Milling Machines.

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Planing Machines in all sizes, Armour-plate Planing Machines, Pillar and Traversing Head Type Shaping Machines, Spiral Bevel Gear Planers, Side Planing Machines, etc.

BORING MACHINES

Horizontal Boring Machines, Special Boring Mills for Turbine Casings, Tyre Boring Machines.

GRINDING MACHINES

Twist Drill Grinding Machines, Cylindrical Grinders, Crank Shaft Grinders, Cam Grinders, Universal Chucking Grinders, Internal Grinders, Piston Ring Grinders, Wet Tool Grinders, Cutter Grinders, etc.

SLOTTING MACHINES

All types including High Speed and Portable Slotting Machines.

MISCELLANEOUS

Cutting-off Machines, Bolt Screwing Machines, Gun-boring, Lapping and Rifling Machines, Centring and Facing Machines, Nut Facing Machines, Universal Sharpening Machines, Mandrel. Presses, Sand Blasts, Air Compressors, Broaching Machines, Twist Drills and Vices of all kinds.

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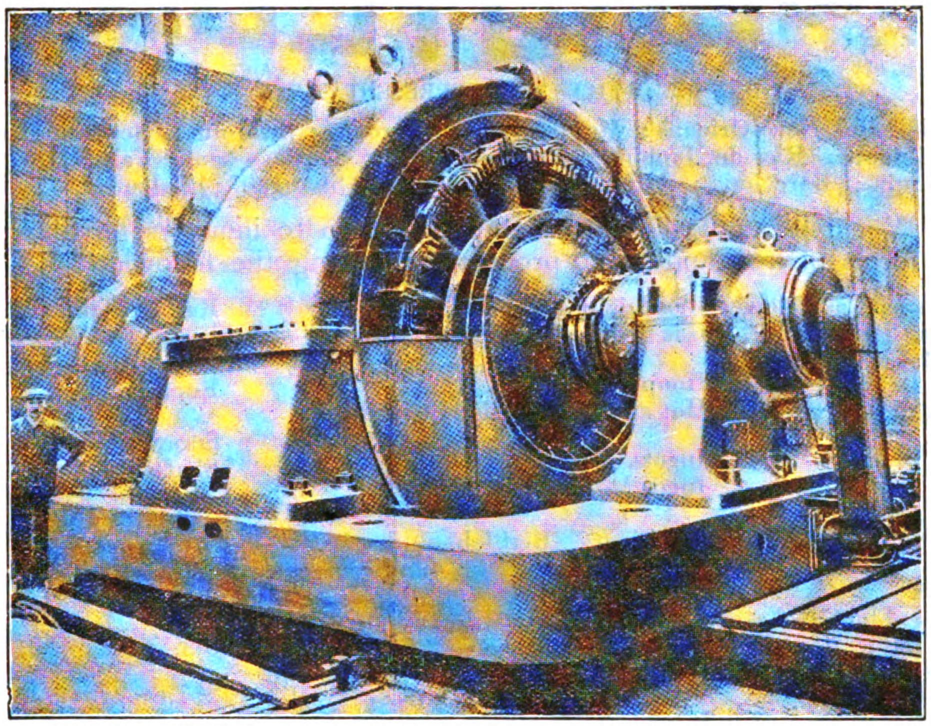

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Agricultural Steel, such as Plow Discs, Harrow Discs, Drag Teeth, Cultivator Teeth, Rake Teeth, etc.
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Anchors and Anchor Chains.
Axles.

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Billets.
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Boiler Tubes, Welded Steel and Charcoal.
Bolts and Nuts.
Bridges.

Cars—Freight, Passenger, Tank, etc.
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Circular Sections, Forged and Rolled, such as Gear Blanks, Pipe Flanges, Crane Track Wheels, and Industrial Wheels of all kinds.
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Nails, Wire.

Ore Crushing Parts—Roll Shells, Ring Dies, Roller Tires, Stamp Shoes and Dies, Stamp Mill Parts, Crusher Balls.

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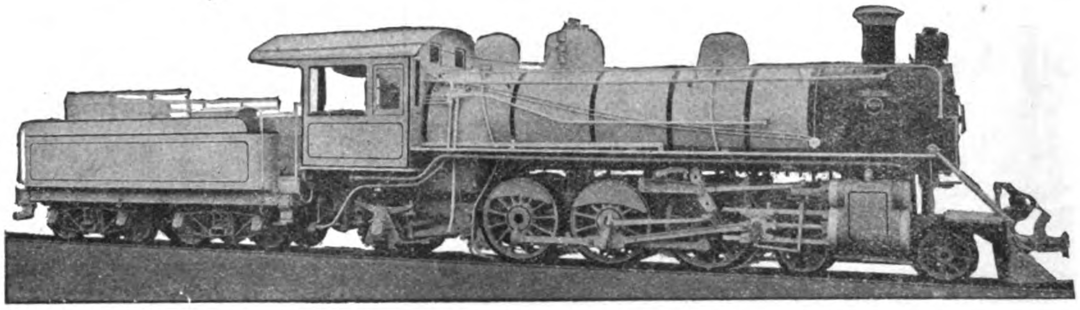
Wire Rods.

As our Member Companies' annual ingot producing capacity is in excess of 12,000,000 tons, we are in a position to handle the largest requirements as well as to give our customers fair prices, quick service, and dependable attention to every detail.

Inquiries should include exact specifications, giving quantities desired, particulars as to size, weight, packing, country of destination, etc., and purposes for which the materials are required.

BALDWIN LOCOMOTIVES IN THE FAR EAST

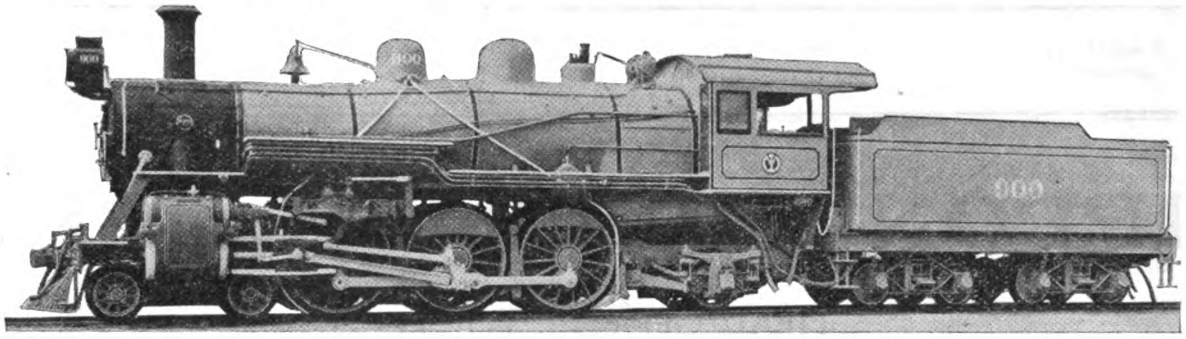


PACIFIC TYPE LOCOMOTIVE FOR THE FEDERATED MALAY STATES RAILWAY.

Gauge—3' 3⅜"
Cylinders—17" x 24"
Coupled wheels, diam.—54"
Steam pressure—170-lbs.
Grate area—24.9 sq. ft.
Water heating surface—1,403 sq. ft.
Superheating surface—350 sq. ft.
Weight on coupled wheels—67,400-lbs.
Weight, total engine—114,800-lbs.
Tractive force—18,600-lbs.

The best locomotive for any given service can be selected only after a careful study has been made of the conditions under which it is to be used. Our engineers are at your service, and will gladly help you choose locomotives specially fitted to do your work.

The illustrations show two Baldwin Pacific type locomotives, recently built for railways in the Far East. This type does its best work in express passenger service, and is equally suitable for either narrow or standard gauge.



PACIFIC TYPE LOCOMOTIVE FOR THE SOUTH MANCHURIA RAILWAY.

Gauge—4' 8½"
Cylinders—21 x 26"
Coupled wheels, diam.—69"
Steam pressure—200-lbs.
Grate area—44 sq. ft.
Water heating surface—2,455 sq. ft.
Superheating surface—589 sq. ft.
Weight on coupled wheels—129,000-lbs.
Weight, total engine—199,600-lbs.
Tractive force—28,200-lbs.

THE BALDWIN LOCOMOTIVE WORKS

Cable Address: "BALDWIN PHILADELPHIA" **PHILADELPHIA, PA., U.S.A.**

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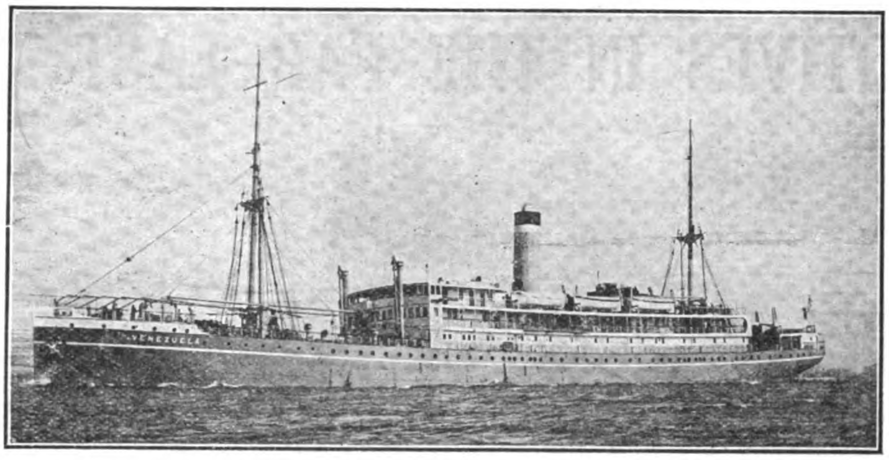
SALE & FRAZAR Ltd., TOKYO, Agents for Japan.



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Single and Two-Bed Rooms (no uppers)—En Suite and De Luxe Rooms—Large Clothes Locker in each Room—Two Washstands in each Room.

Electric Fan in each Room—Electric Reading Light for each bed.

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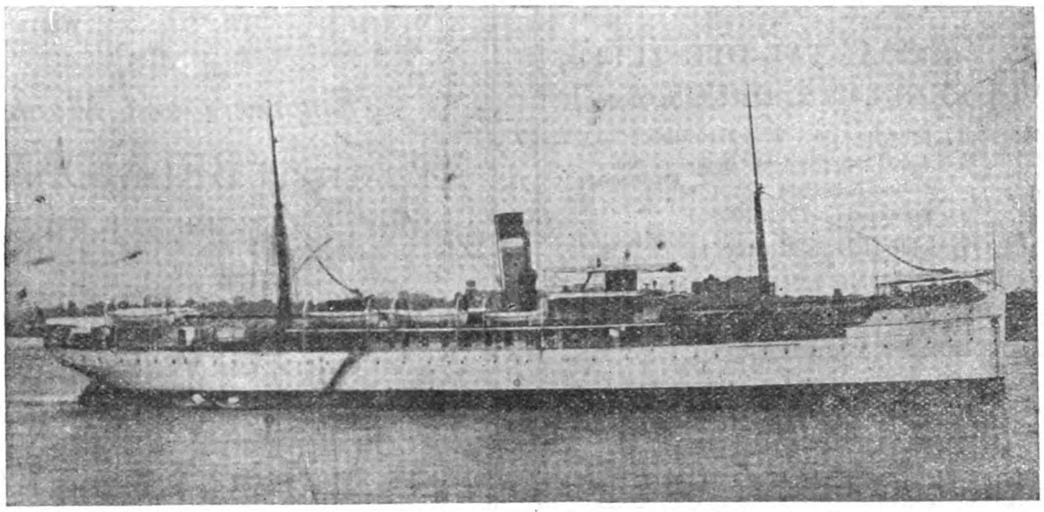

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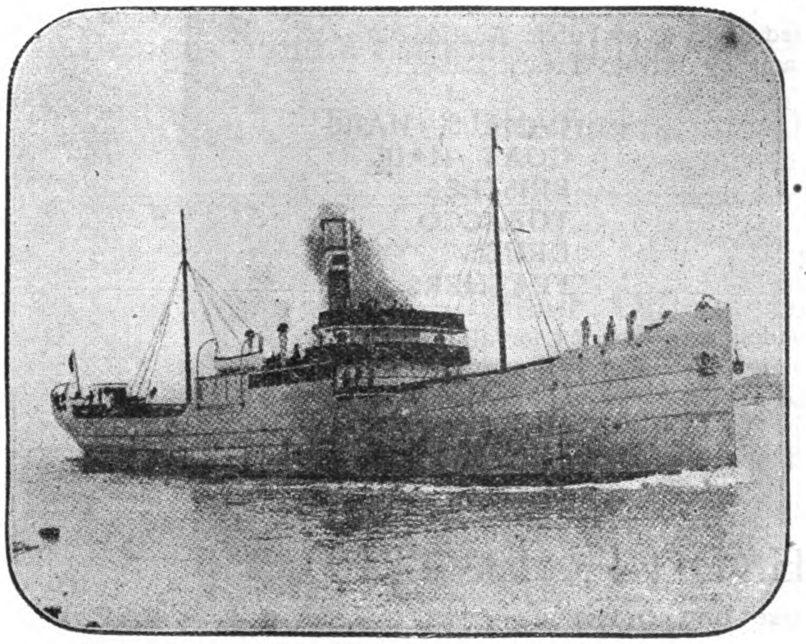

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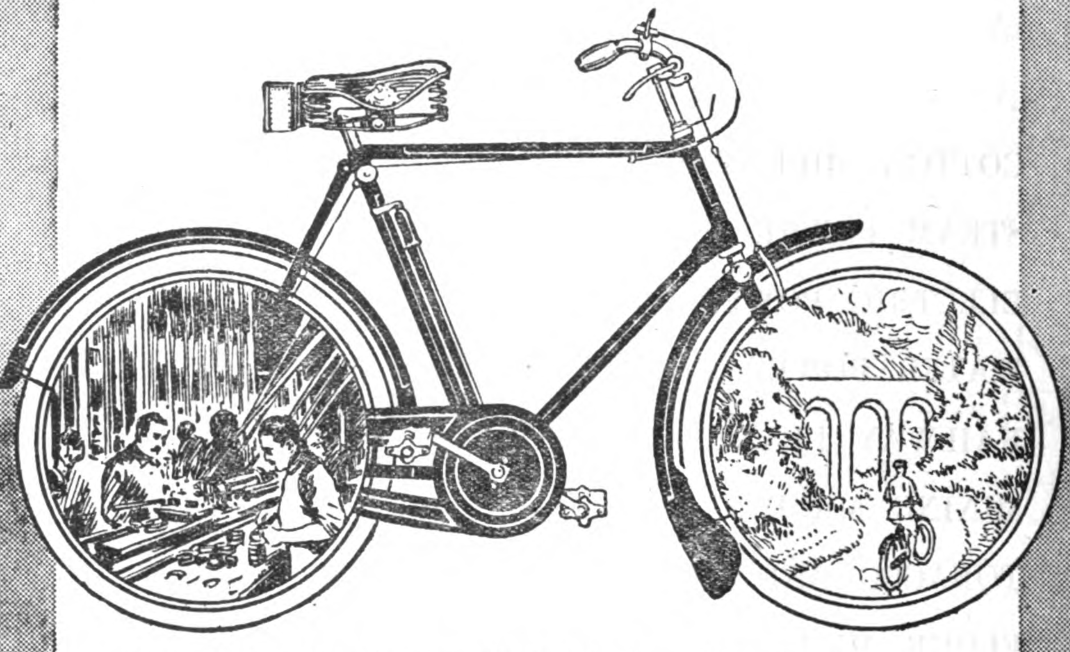

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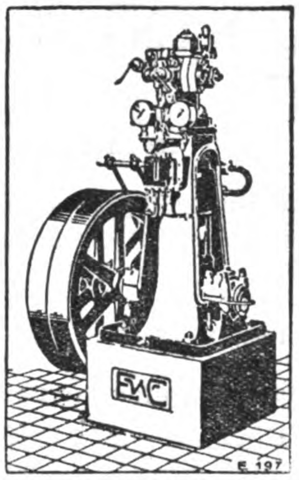

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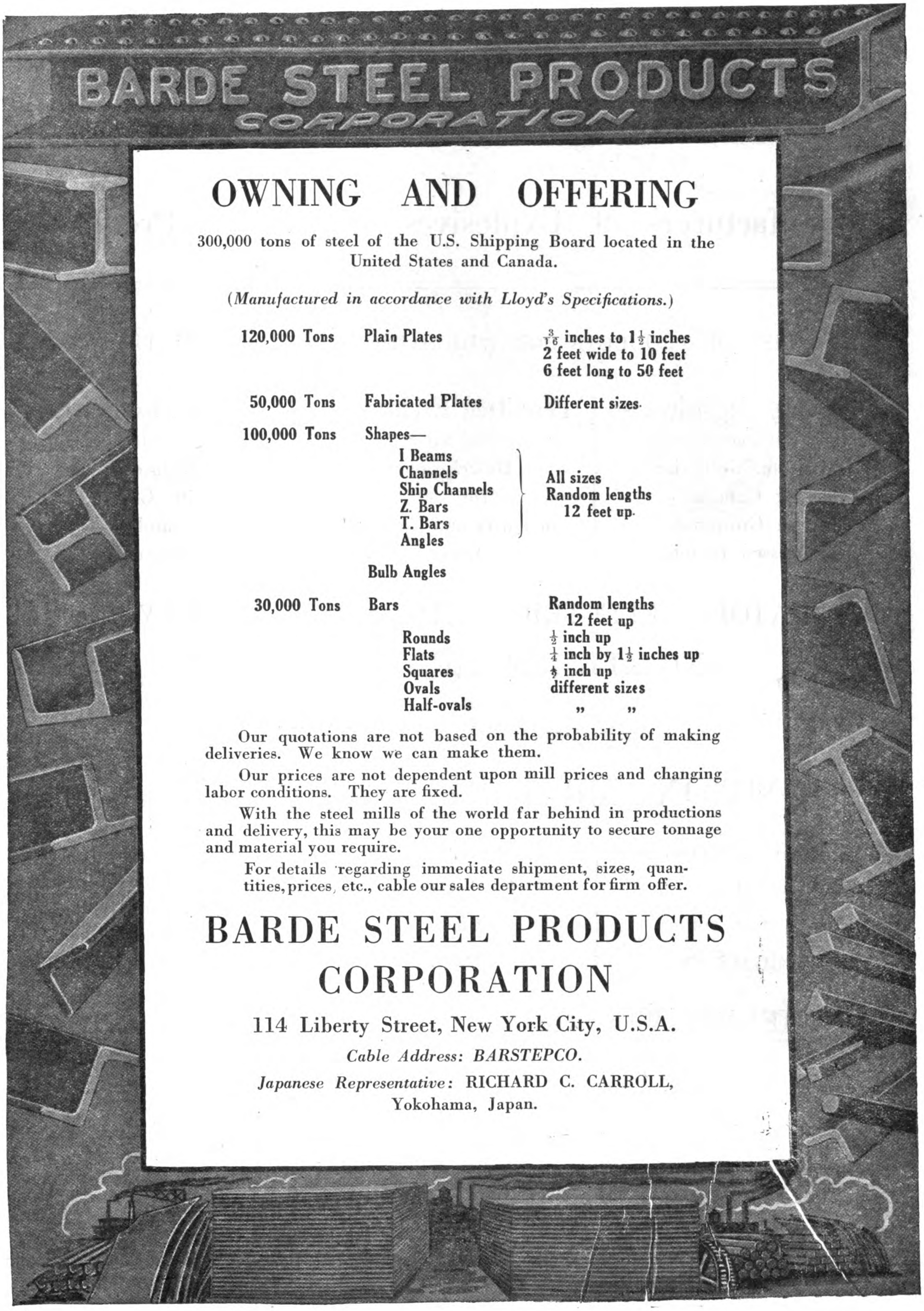
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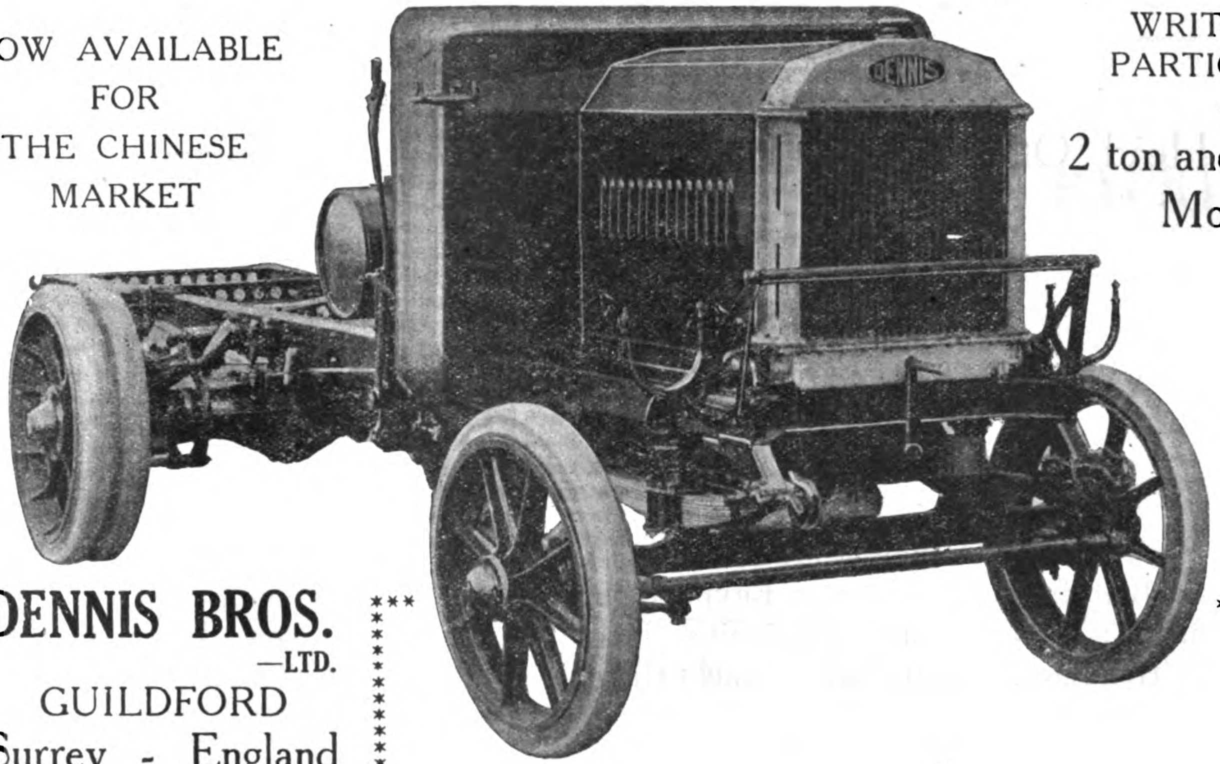

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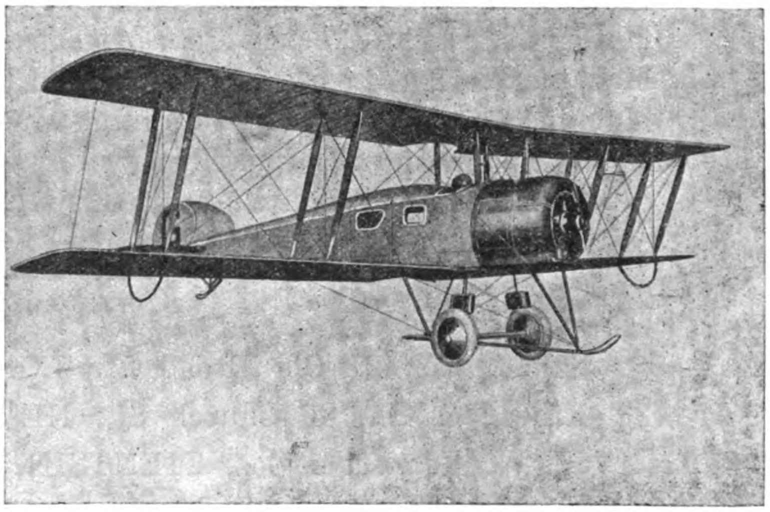

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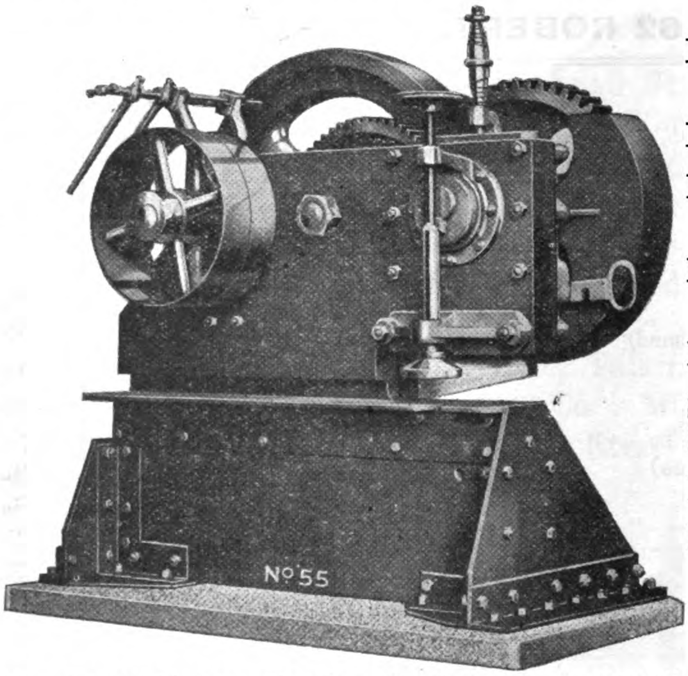

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The Far Eastern Review

ENGINEERING FINANCE COMMERCE

VOL. XVI SHANGHAI, JUNE, 1920 No. 6

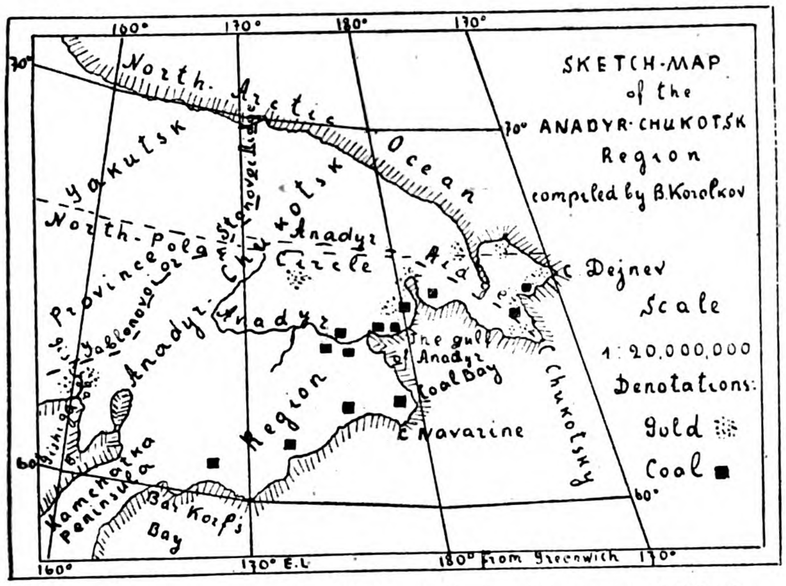
Mines and Mining in Siberia

A Summary of Mineral Deposits and their Present State of Development

By P. Polevoi, Mining Engineer

Translated from the Russian for the "Far Eastern Review" by B. Korolkov, Mining Engineer

THE area of the "Russian Far East," as Siberia is officially known, is 934,465 square miles of which scarcely the one thousandth part has been touched by cultivation. From a mining standpoint, practically none of this vast area has been gone over even cursorily from a geological standpoint and any explorations that have been of benefit to those who seek to develop the country's mineral wealth, have been mostly of an accidental character or merely incidental to railway construction and the like. Some few areas have been made the subject of special study, like the Amur and Sakhalin regions, both of which have been the objective of special expeditions. Even roads, surveys of all but a small part of the country are lacking and no topographical surveys whatever have been made of the great mineralized areas such as the Sikhota Alin ore districts and the petroleum areas of Sakhalin.



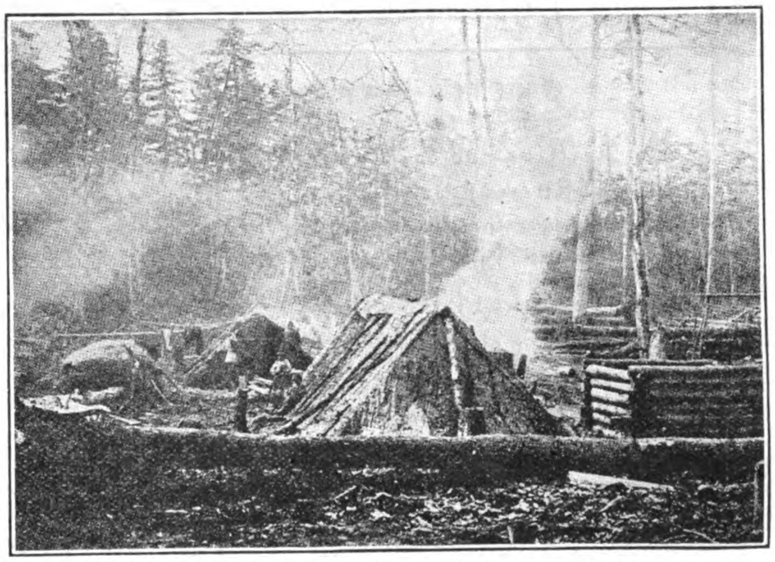
Sketch Map of the Anadyr-Chukotsk Region, North-east of Siberia.

While the Russian mining expert, Mr. Anert, is of the opinion that while the Russian Far East is rich in many minerals, yet the quantity of ore reserves are in no case of great magnitude, the writer cannot agree with him, believing that the Siberia gold placer deposits alone will produce enormously once their real development along modern mining lines is begun. Likewise the silver-lead-zinc deposits of Tetiukhe have huge reserves of ore and the coal deposits of Sakhalin are of such importance that they should now be competing with those of Japan and doubtless will take premier place among fuel deposits of the Pacific.

Gold Deposits of Siberia

Siberia's gold deposits are found in the region of gneisses and crystalline and metamorphic slates, both in the vicinity of igneous rocks and in localities where the igneous formations are lacking. Lode and reef mining, however, holds a decidedly inferior place to placer operations and few deposits of vein material have been worked. Placers of several different types of which the river placers, bed, terrace and watershed formations rank first with ancient and modern lake and seabed placers taking second place. These placers were formed during the Jurassic and Tertiary periods near shores composed of gneiss and slate rocks, an example being the Tsagayan deposits. The more modern sea or beach placers are found in the Ussuri district and in the Chukotsk Peninsula.

Siberian gold placers that are now being worked can be divided into the following groups: Upper Amur or Djalinda, Upper Zeya, Aldan, Middle Zeya or Guiluy, Lower Zeya or Urkan, Unia-Bom, Upper Silinja, Lower Silinja, Niman, Little Khingan, Kerbin, Middle and Lower Amgun, Lower Amur, Lake, Sikhota Alin, South Ussuri, Udylsk, Okhotsk, Guijiga, Kamchatka and Chukotsk-Anadyr. The thickness of the deposits varies greatly, but varies usually between 10 and 20 feet. The deepest placers are those of the Lake and the Niman group where deposits from 35 to 70 feet have been found.



Temporary Huts of Settlers from European Russia in the Amur Province.

As to the available gold in the placers that have been exploited, the General Zemstvo organization has estimated those of the gneiss slate type stretching from the Amur group to the Kerbin (the watershed strip) as containing 237,000 poods of 36 pounds or some 8,558,000 pounds avoirdupois. This comprises the chief placer deposits of Siberia. The following table shows the gold

reported to the authorities as having been mined, and the amount that was retorted in the smelters and laboratories during five years:

Year.	Reported.	Retorted.
1911	17,767.8 lbs.	38,451.7 lbs.
1912	15,958.1 „	37,148.2 „
1914	14,646.2 „	39,814.9 „
1915	16,755.9 „	44,314.2 „
1916	13,293.9 „	35,295.7 „

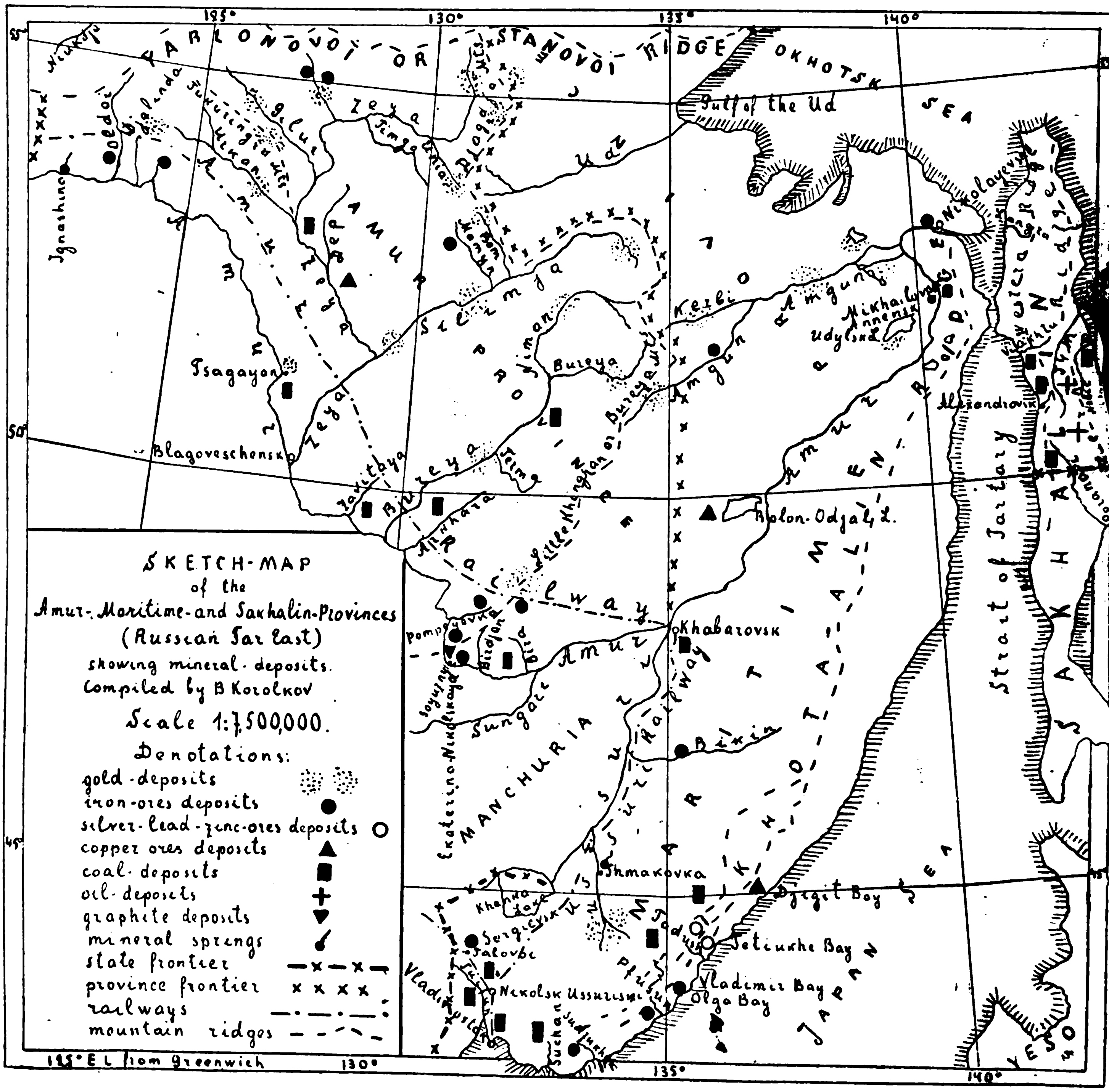
Even the statement of gold retorted does not indicate the full total won from the Siberian placers since a large part was sent to Ekaterinburg and some went abroad, while the Chinese miners carried quite a wealth of treasure over the southern border. In addition considerable gold hidden from governmental ken entered from the Transbaikal region and it is probable that the government report shows only one-third, perhaps only one-quarter, and estimates have been made that the total gold output from the Siberian placers is between 40,000 and 65,000 pounds a year with a probable average of close to 55,000 pounds.

In 1915 there were 282 placers being worked and 5,742 permits to prospect had been applied for. Surveys were made of 1,353 gold bearing areas and permits issued for their working. Of these 441 were mined according to the following methods: Man power 33, hydraulic 2, dredging 7, excavators 2, a total of 44. Aside from these larger enterprises were 397 "zolotnik" or tribute workings by smaller groups who operated under license from the concession holders.

Gold was produced by them as follows: Man power 2,081.7 pounds, hydraulic 67.71, dredging 2,160.3 and excavators 148.05 pounds, a total of 4,457.7 pounds for the larger operators, while the zolotnik workers mined almost twice as much, a total of 8,846.95.

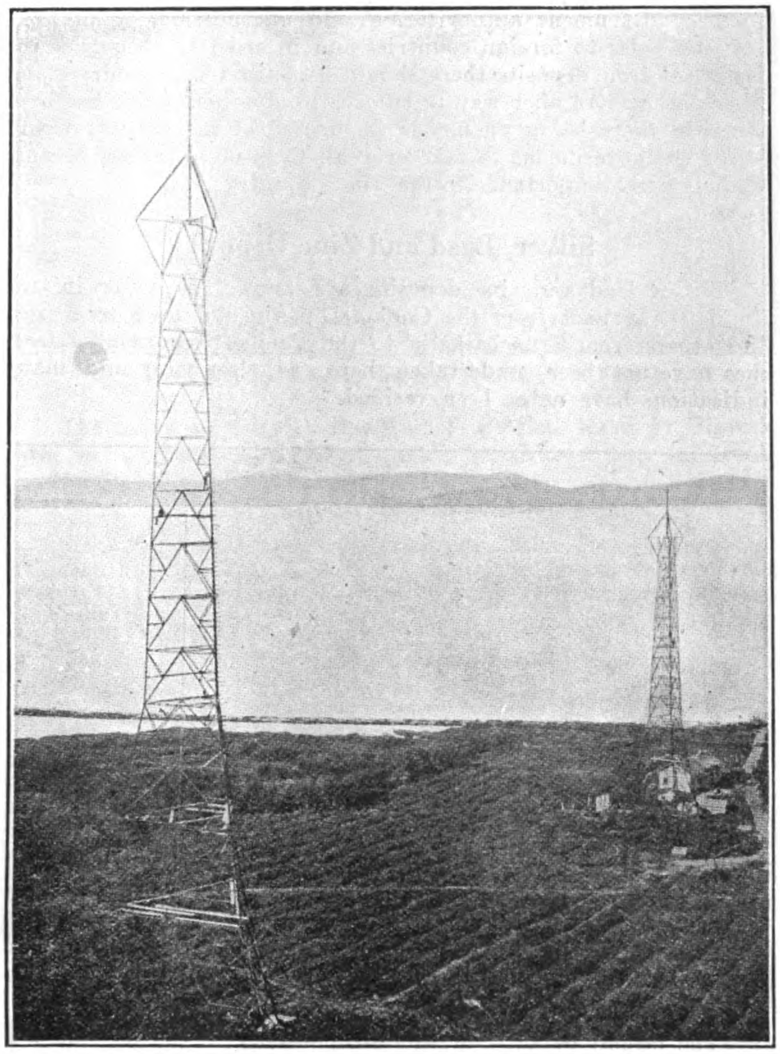
The distribution of the gold produced in the several mining districts was as follows:

Amur district 2,199.19 lbs.; Bureya, 3,407.55, Zeya, 2,475.37, Maritime 5,064.45, and Ussuri 158.12 lbs. a total of 13,304.68 pounds reported to the government authorities. Practically all this output came from the placers as the only lode mining reported was from the Ussuri district with an output of some three poods or 108 pounds. The workmen numbered 24,549 in all these mining areas and were largely Chinese who supplied 76.2 per cent., with



Siberia—Sketch Map of the Amur, Maritime and Sakhalin Province.

Koreans 13.4 per cent. while the Russian miners were only 10.4 per cent. of the number employed in gold mining. The larger part of the workmen were employed on the zolotnik basis where the foremen were compelled to deposit each day from 14.4 to 57.6 drams of gold for the privilege of working, the remainder of the gold they recovered being purchased from them by the holder of the concession at various rates not set forth in official reports.



Wireless Station at Petropavlovsk, Kamchatka.

One great advantage of mining ventures in Siberia is the ease with which machinery of every description may be obtained from the United States whose west coast has many manufacturing plants devoted solely to this class of equipment. Keeping this in view, those familiar with the conditions in Siberian mining areas look for large immediate extensions along the three following lines: New discoveries, intensification of production in existing fields and the discovery and development of reef gold. In the first of these categories, new discoveries are to be expected, mining engineers assert, first in the northeast, in the Udsk, Okhotsk, Kamchatka and Chukotsk regions. Secondly, those deposits in the basin of the Olekma tributaries (Tungir and Niukja), and those of the Aldan where the Tympton and the Sutam already are well known. Gold deposits may be expected in the slopes of the mountain ranges of Tukuringra and Jakja and others on the tributaries that flow into the Upper Bureya from the left. Another promising area is that between the Amur and the middle course of the Amgun while the Ussuri slope of the Sikhota-Alin range has great possibilities. The above are all placer prospects. Hydraulic mining on the Zeya, Unia Bom, Upper Silinja and Niman regions seems promising while dredging in the Kharga-Zeya and Kerby River in the Ussuri district, should be profitable even in the Tungir and Niukja rivers and the Udsk country where the "taliks" or frozen ground that must be thawed is of large extent.

Reef Gold Possibilities

Gold in situ or reefs of some magnitude has been found in the Ussuri, Amur and Kol-Kolchan regions, and even with its present slight development, the Siberian reef gold resources would arrogate first place in all Russian territory. The present difficulty in the way of systematic development is the lack of any scientific information regarding the country on a large scale. Geological explorations must be made not only from the placers as a groundwork, but with a single eye to mountain configurations and geological structure of the nearby regions. Topographical surveys are lacking and even the water courses have yet to be set down accurately from a hydraulic mining standpoint aside from their value as energy producers for power mining. Study must be made of the thermal conditions as regards the frozen and unfrozen areas. These factors must be joined with the opening of the 100 verst strip in which mining is now forbidden and some method must be found to stimulate rather than retard as at present the prospectors, those voluntary gold seekers whose work has extended to all other fields. The present rapacious method of working various concessions and the "truck system" of furnishing the miners' stores must give way to more equitable means of supply.

These are a few of the main difficulties hedging in mining ventures in Siberia. Foreign capital must be admitted and safeguarded if large developments of this potentially rich field is to come speedily. Asiatic labor must be encouraged and state credits for the purchase of machinery and the opening of new deposits should be fostered. The taxes should be more equitably distributed and that for the melting of gold into bullion should be reduced to one-half of one per cent. Prohibition of the free selling of gold in the mining regions allowing sales only in centres of commerce and industry would enable the miner to obtain better prices for his product. Many other measures for the relief and extension of the mining industry have been proposed and are still being advocated by associations formed of those actively engaged in mining.

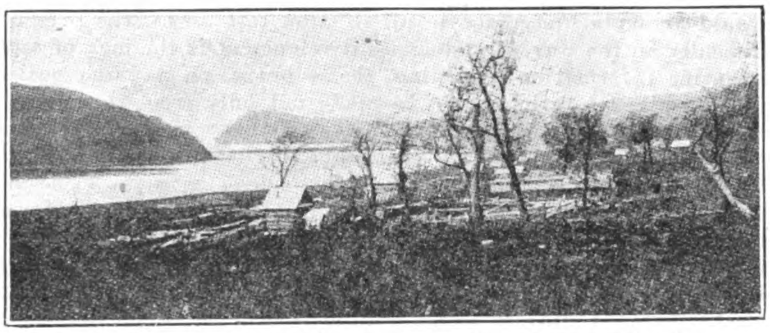
Iron Deposits of Siberia

Some iron deposits of Siberia have been known for more than 75 years but little attention was paid them owing to the quicker returns to be obtained from gold placers. Magnetite deposits are known but have not been fully explored in the Amur province, the basin of the Mamyn, and the upper reaches of the Yvatikane being especially promising while some discoveries have been made in the Great Sugdjara, Bryanta, Oldoi and Amgun River regions, as well as on the lower Amur. The chief magnetite deposits are in the South Ussuri district where the Olginsk area is the richest. These deposits are found in the contact of limestone and granite, the former being the most important factor. The best deposit now known is that of the Bielaya-Gora, or White Mountain, on the right bank of the Arzamassovka rivulet, where three huge lenzes and some rich pocket deposits have been located near the Serafimovka village. True "load stone" ore is found in the St. Olga and St. Vladimir bays, and this is held to be second in importance of magnetite deposits. Other regions of iron ore are on the Sudzukhe River, near the Talovoi switch on the Ussuri railway and in other localities of the Ussuri district. The average percentage of iron in these deposits is not high, running about 40 per cent., although some parts of the deposits are much more promising. It is possible that with depth the quality of the ore will improve or that sulphurous ores will take the place of the magnetite. The ores now known must be concentrated before smelting, but the cost of this in the case of magnetite is not prohibitive.

After a magnetometric survey in 1917, the total ore in the Bielaya Gora deposit including the magnetic and the marble cape deposits was estimated at 2,040,215 tons, while the Sergievsk and Sudzukhe ores aggregated 243,745 tons more, a total of 2,283,960 tons.

Hematite ranks second. It is to be found in the Little Khingan Mountains mostly in connection with a series of metamorphosed limestone, hornstone and slate. The deposits are situated in two meridional layers—the southern—stretching from

the Amur, near the cossak village (staniza) of Ekaterino-Nikolskoye, to the river Pompeevka, and—the northern—from the Londoko station on the Amur railway to the upper part of the Bidjan river.



New Settlement in the District of St. Olga, Maritime Province.

The layers of hematite are generally in the form of lenzes which sometimes attain a thickness of about 140-ft., the percentage of iron in the ore varying from 35 to 65 per cent. The total ore of the southern field is estimated at about 2,708,250 tons, whereas the northern deposits have scarcely been explored at all. This ore must also be concentrated before smelting and separated from the intermixture of hornstone.

The researches of Anert disclosed that the Sergievsk deposits in the Ussuri district were not hematite, but consisted of magnetite and bog-ore. Bog-ore deposits are frequent in the area of Sudsukhe and on the lower Amur, one of the most important being situated within the town of Nicolaevsk on the Amur. It is a lake deposit stretching over basalt formations containing a considerable percentage of iron and has been formed in the Quaternary period by sediments of ferroneous springs. These ore deposits generally take the shape of lenzes.

According to several estimations they contain about 902,750 tons of ore, with a percentage of iron from 40 to 50 per cent.

Spherosiderites have been discovered on the Bikin river and among the carbonous sediments of the Tertiary period.

The following table shows the estimates of iron ore in the country:

	Magnetie	Hematite	Lemonite
	in thousands of tons		
Olginsk area	2,040	—	—
Sudzukhe	126.5	—	126.5
Sergievsk	117.5	—	144.5
Little Khingan	—	2,708	—
Nicolaevsk Amur	—	—	903
	2,284	2,708	1,174

or 6,116,000 tons of ore containing about 2,527,700 tons of metal.

The outlook for the iron industry in the Russian Far East is not very bright, and it would take long and strenuous research work and the opening of the country to civilization in order to put it on the same line with Western and Central Siberia, though the far-eastern deposits are by far the richest in Russian North-Asia. The imports of Russian and foreign iron-ware into the country show that the yearly quantity needed by the Far East amounts to about 72 thousand tons and this could be easily supplied by the existing deposits. The vicinity of coal mines (in the Suchan area and on Russian Sakhalin) and transport facilities as offered by the sea, the Amur river and the Amur railway, all tend to further the development of the iron industry, at least on a small scale.

But it would be of the first importance to continue the investigation of all known deposits and verify the rumors which are current on this subject. Geological explorations should be combined with magneto-metric surveys and no effort be spared because the future of the iron industry is closely connected with the development of this country in the way of railroad construction, etc., the present conditions of which being one of the principal obstacles to colonization.

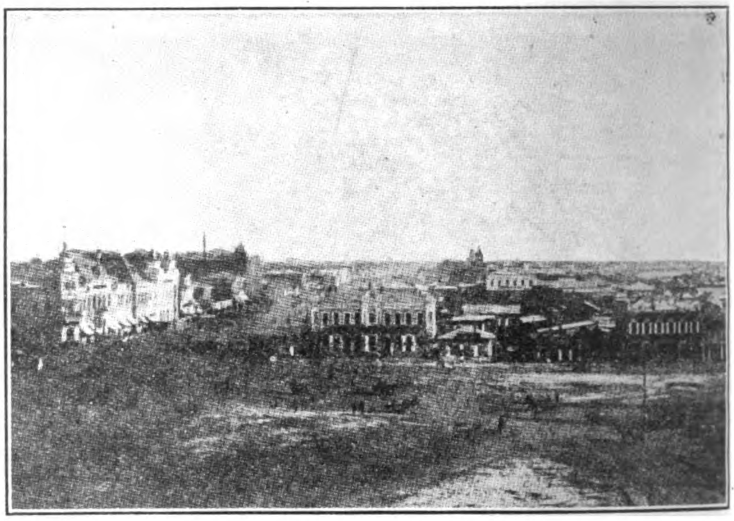
Actually iron-ore is produced only in the Olginsk and Sergievsk districts. With the prevalence of a system of compulsory production (about 44,500 cubic feet per claim being obligatory) the average yearly output varies between 9,000 and 18,000 tons, whereas the total stock of produced ore amounts to 27,000 tons.

The producers have many a time, but unsuccessfully, applied for a permit to sell the above ore to Japan. (In that country the marketable ore has to contain not less than 50 per cent. of iron and no more than 15 per cent. of silicium, 0.1 per cent. of sulphur and 0.05 per cent. of phosphate).

The government authorities should unconditionally prohibit any such sales to foreign countries and in order to encourage the owners of iron deposits there should be built iron foundries and other plants. Another way to enforce production, which has been sluggish, there being no means to dispose of the output, would be for the government to take over all these ore-deposits, because of their great importance to the whole country.

Silver, Lead and Zinc Deposits

Silver, lead and zinc deposits are known to exist in the Russian Far East from the Chukotsk peninsula down to Korea, and others from Transbaikalia to the Pacific. Thorough researches have not been undertaken here, as elsewhere, and many indications have never been verified.



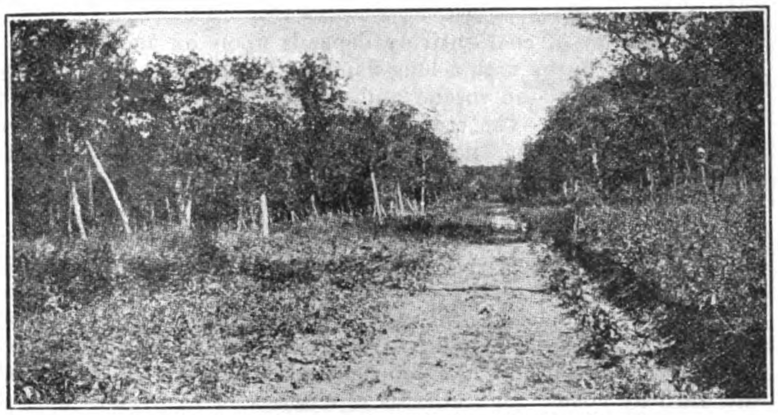
City of Blagoveschensk on the Amur.

The largest deposits of this ore not only in the Russian Far East, but in the whole of Russia, are those situated on the southern part of Sikhota Alin range, and particularly in the area of Tetiukhe. This has been explored by B. J. Bryner and P. T. Polevoy. The ore is found in a deposit of the contacto-metamorphic type and consists of sulphurous minerals—galena and blend, superposed by calamine, smithsonite and ochric substances. The whole has the shape of a lenz. The deposit is in contact with hedenbergite, the latter being closely intershifted with sphalerite and galenite is an important factor at the concentration of the ore.

The total quantity of ore is estimated at about 1,765,000—2 million tons, containing, on the average, 12 per cent. of lead, 17 per cent. of zinc and 280 grammes of silver per metric ton. The concentrating mill of the mine is in a position to put out annually from 70 to 50,000 metric tons of ore, the produce being:—concentrated lead, containing 70-72 per cent. of lead, concentrated zinc (33-37 per cent. of pure zinc), half-products containing about 27 per cent. of zinc and dump (slick)—with 13 per cent. zinc. The mill could be improved by introducing oil-concentration and would be then able to produce concentrated lead of 80 per cent. and zinc of 90 per cent. of pure metal. It would also be necessary to introduce a device for mechanical separation of the ore previous to it being concentrated.

There being no foundries the whole enterprise is entirely dependent upon the Japanese market where the concentrated lead is disposed of. Before the war it was possible to ship calamine to important European places, as London, Amsterdam and Hamburg.

The present output of the Tetiukhe works may be raised to 63,000 tons of metallic lead, 7,200 tons of metallic zinc and 25,300-lb. of silver. At the same time it is possible to develop sulphuric acid for cellulose works and the refinery of petroleum if the latter industry be developed on Russian Sakhalin.



Road Cut by Settlers through the Siberian Forest.

The other deposits in the Ussuri district—those of Olginsk, and on the Pfusun and Wanchin rivers are not very important and quite depend upon the Tetiukhe works for smelting and concentration of their ore.

Some deposits of silver pyrites have been discovered on the Kamchatka peninsula and along the coast of the Okhotsk sea. Following is the output of the mines in the Ussuri district (Tetiukhe)—in tons of 2,000-lb. each:

	Sulphurous ores.	Calamine.
1911	4,983	26,907
1912	5,629	31,420
1913	33,184	29,482
1914	69,572	23,432
1915	55,124	8,673
1916	62,382	5,993
1917	104,975	783

of which there were exported

	Calamine	Sulphurous ores	Concentrated lead
1910	19,900	—	—
1911	23,156	—	1,643
1912	25,214	—	140
1913	11,002	—	150
1914	—	—	90
1915	—	446	—
1916	—	5,500	—
1917	—	6,840	—

The yearly consumption of these metals in the Russian Far East is as follows—lead from 180 to 450 tons and zinc—from 36 to 54 tons. Accordingly the Tetiukhe works are not only in a position to supply the above quantities, but are obliged to look for foreign markets to dispose of their produce of which silver will always be readily taken up by China.

Copper Deposits

Indications of copper are very abundant in the Russian Far East and a glance at the map will confirm this assertion. We mention only copper-island in the Behring Sea, Copper Cape in the Straits of Tartary (between the mainland and Sakhalin) and the copper-springs in the Ussuri district. Copper is to be found on the Amur near the Bolon-Udjal lake, on the river Zeya, etc.

Copper ore is always very conspicuous owing to the lively coloring of the copper-oxides. Up to the present time mining work has been done only on two of the Ussuri district deposits, situated on the Djigit bay and owned by the Siberian Mining Co. (Peppel and Ozmidoff). One of these deposits is on the sea shore interposed among metamorphic slates. The other one lies in the valley of the copper rivulet and consists of veins. In both cases the ore is chalkopyrite. Individual pieces of ore contain from 5-8 per cent. of copper, whereas the average does not show more than 1.5 per cent. of metal, which is not sufficient for industrial purposes in the Russian Far East (the minimum percentage being 2.5-3 per cent.).

The Djigit mines produced the following quantities of copper-69 tons in 1911, 144 in 1913, 136 in 1916 and 11 in 1917. This is obviously quite insufficient as the yearly average consumption of copper ware in the Russian Far East is about 2,300 tons. On the other hand the copper mines in the Russian Far East would never be able to compete with the highly developed copper-industry in Japan, nor with the rich copper deposits in Western Siberia, which are gold-bearing.

Information on other mineral substances of the country is very scanty, and no particular attention has ever been paid to them. Considerable deposits of Antimony have been discovered on the Bogucban mountains; graphite—on the Amur river (near the village Soyuzny) and sulphur on the Kamchatka peninsula. In addition arsenic-ores, cinnabar, mica and other minerals have been traced.

Up till the present time salt has nowhere been discovered and there are no prospects of discovering it. This is greatly to be regretted as salt is one of the most necessary commodities to the flourishing fishing-industry of the Russian Far East which consumes alone about 90,000 tons a year.

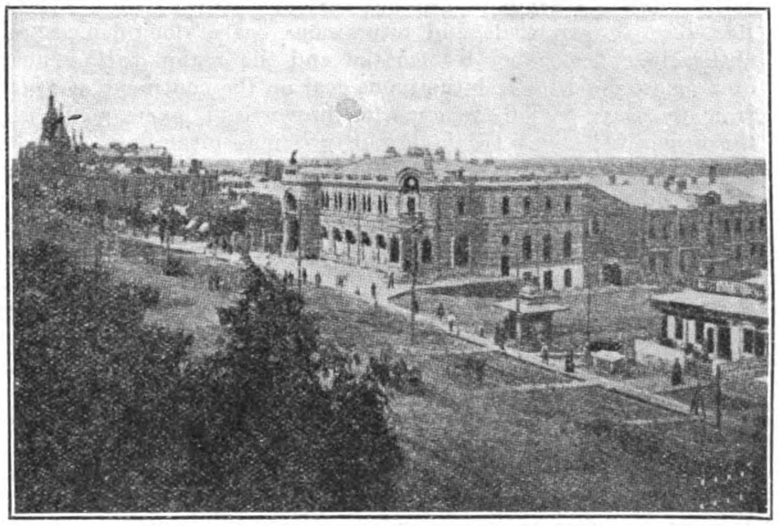
It would not pay to carry salt from the Yukutsk province and, probably, it will be imported again from the Suez canal, Germany and South Russia, as soon as freight rates get lower.

Mineral springs have been located in many places of the Russian Far East. In the Amur province are known the Ignashinsk alkaline-acid and the Kuldursk hot-sulphate springs, and the Anninsk hot springs near the Amur estuary. In the Ussuri district is located the carbonic spring near the Shmakovka village; then there are the Agsevski hot springs on Sakhalin and many volcanic springs on Kamchatka.

These springs have never been explored from a geological or balneological standpoint. The so-called "watering places" are in so bad a position that would-be patients lack even the most rudimentary comfort.

Mineral Fuel

Coal.—Mineral fuel is rightly considered as the life-essence of any industry at the present time. The importance of coal-mines is generally more or less dependent upon the transportation facilities, particularly in a country like Russia with bad means of communication. That is why the coal deposits in the Russian Far East, situated more or less closely to the coast of the Pacific Ocean, are destined to play a very important rôle in the future.



Principal Street in Khaborovsk on the Amur.

The Pacific Ocean is at the present rivalling the Atlantic and very fast becoming the most lively ocean highway of the nations. Though it still ranks second in the estimates of trans-oceanic cargo traffic, the opening of the Panama Canal and the fast

development of commerce and industry in all Pacific countries which have the advantage of possessing their own raw material, foreshadow that eventually the centre of gravity of world-commerce will be shifted over to its shores. The first indications of such an evolution may be seen in the increase of the consumption of coal. Even now the output of mineral fuel does not keep pace with its consumption.

Sakhalin—Coal Mine.

At the present time the principal coal-supplying countries on the Pacific are Japan and Australia. China abounds in very rich coal deposits, but these are chiefly a great distance from the coast. The difficulties of transport and the general economic conditions of the country force her to rely upon the import of foreign coal, mostly from Japan.

The Western United States and the countries of South America are great consumers of coal, but they do not possess large deposits of their own and depend upon importation. British Columbia and Alaska are in a much better position and produce quantities sufficient for all local requirements.

The time will not be long when the Russian Far East will become involved in the current of international traffic and trade and then the question of coal supplies will become even more acute than it is now. At the present the Far East is subject to a continuous coal crisis.

All existing kinds of mineral coal are extant in the Russian Far East—brown coals and bituminous coals, long-flamed and anthracite. Excepting Kamchatka and the region to the north of it, most deposits of bituminous coal on the continent originate from the Jura-period, whereas the brown coal layers go back to the upper tertiary. In the Amur province bituminous coal has been discovered in the area of Zeya-Depsk, Bureya-Terminsk and along the river Bira, and brown coal in the Bureya-Zavitinsk region, on the Arkhara river, the Zagayan mountains and several others. The South-Ussuri district ranks first in the Maritime Province and the most important bituminous deposits are situated in the surroundings of the cities of Vladivostok and Nikolsk-Ussurisk, on the northern slopes of the Sikhota-Alin range, on the lower course of the Amur near the cossak village of Mikhavlovsk. Brown coal has been found in the Vladivostok area too and then, more to the north, on the river Tadush, in the vicinity of the city of Khabarovsk, and in some other places.

In the island of Sakhalin and the Kamchatka peninsula the coal-bearing strata are much the same as in other Pacific countries, viz., Japan, Canada and Alaska and mineral coal is generally located in deposits of the tertiary and cretaceous eras.

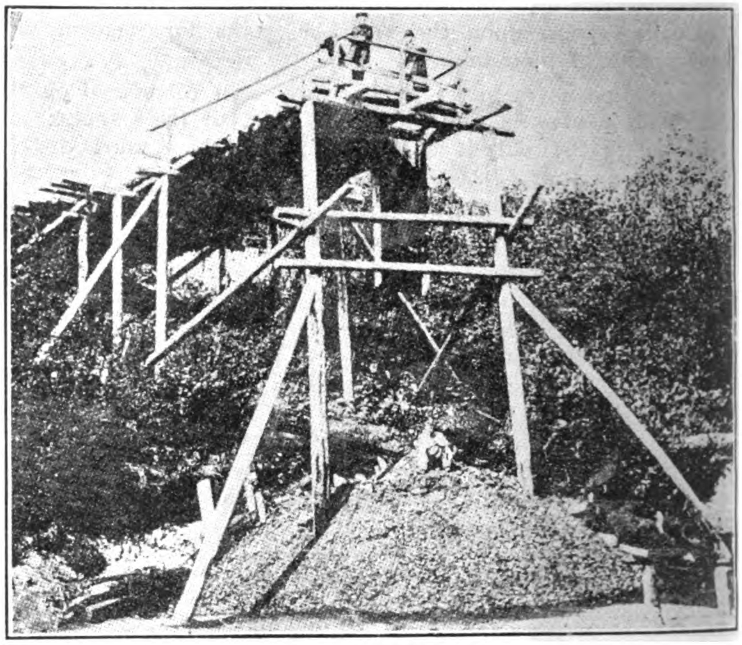
The miocene and cretaceous coal deposits are very important, while the eocene (later tertiary) coal is distinguished by its excellent qualities—it is a perfect coking coal which leaves practically no ash.

The island of Sakhalin contains the richest coal deposits in the Russian Far East. The principal area is situated along the western mountain range and stretches from the river Viakhtu to the Japanese frontier. In the east, coal is found on the eastern slope of the eastern range from the Ossoy mountain to the Nabil river. Several less important deposits exist in the northern part of the island.

The quality of coal entirely depends upon its age. Miocene coal generally burns with a long flame and is slightly bituminous, whereas coal from the eocene and cretaceous areas is coking and highly bituminous. The cretaceous coal yields ash from 15 per cent. and up. The quality of mineral coal is subject to considerable variations dependent upon the tectonic structure of the soil or the proximity of volcanic strata.

The coal district in Kamchatka, lying between Baron Korff's bay and the Anadyr river, is but little explored.

The importance of the deposits on the mainland is purely local, whereas Sakhalin coal might acquire a world-wide reputation, Kamchatka's deposits may serve to give additional freight to ships plying northwards and provide them with coal for the way home. But all this is a question of a more or less remote future as the coal deposits of the Russian Far East are practically unexplored.



Sakhalin—Coal Mining

The approximate estimate of mineral coal in these districts would be, as follows:—

In thousands of tons

	Amur province	Maritime province	Saghalien	Total
Brown coal	406,237*	3,611†	1,806	411,654
Bituminous	903‡	39,721§	2,708,250	2,748,874
			Total	3,160,528

In other words, the estimated stock of mineral coal in the Russian Far East amounts to more than 3,000 millions of tons. The Sakhalin coal is of the highest standard and its best sorts, particularly those of the Dui stratum (Paleogene) excel by far those of Japan.

Coal-production is very little developed and in no comparison whatever with the huge available deposits of Sakhalin, where one of the principal obstacles in the way of a regular coal industry is the absence of a good harbor.

* Bureya-Zavitinsk
† Ussuri
‡ Zeya Depsk
§ Ussuri

The most considerable output is effected in the Ussuri district, which was, as follows (in thousands of tons):—

	1915	1916	1917
Private mines	205	248	238.5
Government-owned Suchan mine ...	226	298	317
Total	432	546	555.5

	Thousands of Tons		
	1915	1916	1917
In the Amur province	4	1†	1†
Sakhalin	31	19	14.5
Total for Russian Far East production	467	566	571
Import of foreign (mostly Japanese) coal	92	53	28
Therefore coal consumption may be estimated at	559	619	599

Camp of Convicts Employed at the Construction of the Amur Railway.

Taking into consideration the several other less important mining areas, the total consumption of mineral coal in the Russian Far East may be put at about 720,000 tons a year. Technical exploitation, except at the Government-owned Suchan mine is on a very low level and more comparable to common handiwork than a regular industry. The output of the Suchan mine is restricted by the transporting capacity of its railroad, which is unable to carry more than about 235,000 tons annually.

A great impediment to development on a larger scale is the practical absence of capital in the country.

In the coal industry it is very essential to use the proper quality of coal and in this respect coking coals are by far the most important.

By-products of the coking procedure, as ammonium-sulphate, benzol, toluol, aniline and alizarine colors may substantially change the whole character of the industry and furnish a lot of useful articles to the country. Production *en masse* could be furthered if only the ways of communication were improved. The Suchan area must get an outlet toward the Nakhodka bay and be connected by a broad gauge line with the Ussuri railway.

In Sakhalin a regular port should be constructed at Alexandrovsk, as it is the natural centre for the rich coal districts in its vicinity and on the Great Alexandrovka river. More remote regions with large coal deposits are apt to build their own ports, whence the output will be shipped to Alexandrovsk.

It would take only about five years to raise the coal production of Sakhalin to one million tons a year and if proper harbors be constructed and developed the annual increase of the output would be about 20 per cent.

Special stress should be laid upon the continuation of researches in all the coal-bearing areas. In the Ussuri region a thorough investigation should be made of the Middle Suifun area (near to the city of Nikolsk-Ussurisk) and of the district to the north of Suchan up to the Sikhota-Alin range. In the Amur Province the Bureya-Terminsk area has to be explored and in Kamchatka the almost unknown region along the coast of the Behring Sea, from Baron Korff's bay to the Anadyr river.

On Sakhalin Island investigations should not be confined to the western slope of the coal district in the west of the isle, but also extended to the eastern (Poronay) incline. The eastern range should be explored along with the research work done on oil fields which are situated in the same area.

In order to get an exact picture of the importance of the coal deposits and industry in the Russian Far East it would be necessary to make a comparison with the principal coal-producing (Japan and Australia) and coal-consuming (China, Western States of America, the Philippines) countries of the Pacific.

Petroleum.—Petrol oil will always be one of the most important industrial factors in the country, because of its high heating value, its easy handling, the various uses which can be made of it. Its production too is comparatively simple.

It is very dangerous to draw any premature conclusions on oil-carrying districts before a careful investigation has taken place.

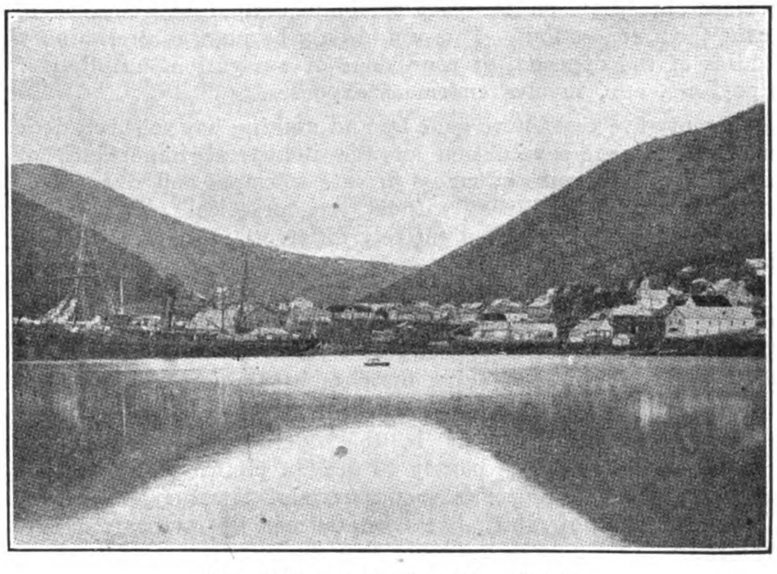
On Sakhalin island oil has been located on the east coast from the Okha river in the north and almost down to the Languery river in the south—a distance of about 180 miles. The geological expedition in 1908/10 located 14 seepages, at the present 20 are known. There are 9 deep-bore layers—2 on the Noglik, 2 on the Nutovo, 4 on the Boatassyn and 1 on the Okha river.

The average depth of these deep-bore holes is about 480-ft., the deepest is that belonging to a Mr. Kleye on the Boatassyn river, its depth is 930-ft.

Boring was not done scientifically from a geological point of view. It was mostly of a casual character and depended upon the facility of obtaining the necessary implements and was carried out in places where there were natural seepages of oil.

Boring was made with water; accordingly a water-stopper was formed and the percentage of oil consequently appeared to be small. The quality of oil improved the deeper the boring was effected. The oil contains but little benzine and no parafine and is of the naphthaline quality.

There is no doubt that oil of a better quality will be discovered in Sakhalin; it should also be considered that just as in the oil district of the Japanese province of Echigo, the oil is improving with the increase of depth.

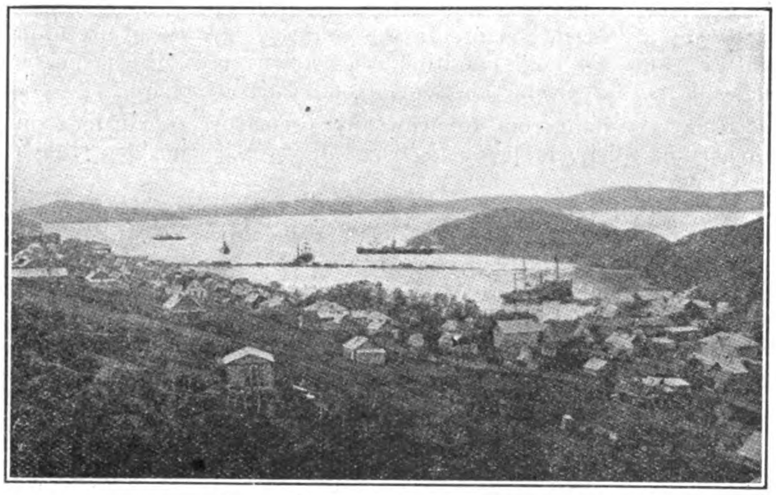


City of Petropavlosk on Kamchatka.

The seepages occur in very unfavorable conditions, mostly in swampy localities covered by a dense vegetation. The underground is formed by post-pliocene strata concealing the outlets of the regular oil fields. Therefore there is only one way of exploring the geological structure of the soil, *i.e.*, to drive small shafts and surface-trenches, or to practise hand-boring in order to locate the correct points for placing deep-bore holes.

† Total output from 1911 to 1916 amounted to 6,485 tons. Exact information is, however, wanting.

It is supposed that the oil on its way to the surface passes through a series of recent tertiary sediments consisting either of lower horizons of pliocene or higher horizons of meocene. But the quantity of oil-carrying horizons, their importance and saturation have never been ascertained. The tectonic problem has to be cleared up, too. There is no doubt that the general direction of the seepages falls in with a certain tectonic line and this correspondence is confirmed by several newly discovered seepages. But the geological cross cutting still remains a riddle. The descent of strata on a large surface has been observed on the east side of the horizon and there is no trace of anticlinal folds which are so greatly appreciated by oil experts.



Inner Harbor of Petropavlovsk.

Anert is of the opinion that the folds are isoclinal, whereas Polevoi and Tikhonovitch are more inclined to the presence of graduated folds.

The east coast of Sakhalin is almost uninhabitable though there are a few good harbors (the entrance to the bay of Chay is 21-ft. deep). The navigation period is a very short one and never exceeds 4 months. The vicinity of Japan is of the greatest importance it being possible to study there analogous geological difficulties which have been overcome by science and technical application. The usual claim system is not apt to further the development of the oil industry. The best way to encourage private enterprise on the part of sound companies would be to grant them concessions. This would only be just, as preliminary studies of the deposits, of conditions of navigation, building of pipe lines, etc., involve enormous expenses.

Twenty-five years have gone by and nothing has yet been done in order to make a valuation of the industrial importance of Sakhalin oil, in spite of many private attempts and researches; and many more will pass without any practical result if the question is not taken up on entirely different lines from those of the past.

A good example of what may be accomplished through the concessions-system is shown on the Urals where the concession of Mr. Leman has ultimately developed an area which now ranks third among the oil-producing districts in Russia.

The present article is by no means a definite condemnation of mining industrial prospects in the Russian Far East. The purpose of the author is merely to draw a picture of the actual information concerning this vast stretch of territory, only one-thousandth part of which has been touched by civilization and explored. There may be no doubt that the industrial and trading conditions in the country will in a while be subject to the most radical changes. In the first place foreign capital will have to become the most important factor of future development. It will invade first of all the Russian Far East which will soon experience its imperative hand on every side of industrial life. Very much will depend upon the sagacity of the leading men gradually to alleviate the political importance of such an evolution. The growth of Russian capital and Russian labor can only be brought about by a far-seeing and continuous policy.

Mining in Western Siberia

[Weekly Bulletin, Canadian Department of Trade and Commerce]

A well-known American mining engineer has contributed a few notes in the Vladivostok newspaper "Echo" regarding the mineral wealth and development of the mining industry in Siberia. The engineer has been connected for many years with mining enterprises in Siberia, notably the placer gold mining on the Lena River. The following notes on the mining industry of Siberia should therefore prove of interest:

The years 1907 to 1915, inclusive, witnessed a remarkable activity in the development of a few of the gold and base-metal deposits of Siberia and the Urals, under the auspices of British capital and the technical control of American engineers.

Kyshtim Copper Mines

The Kyshtim Mining Corporation (Ltd.), was built up from the ruins of a semidefunct Russian company which had mined copper in a desultory way for a period of nearly a century before 1919. About £900,000 [$4,380,000] was raised in London by means of debentures, and pyritic smelting of the ore was introduced from abroad. This was found to be the salvation of the property, and under able direction the Kyshtim, from being an abandoned mine, became the largest copper producer in the Russian Empire. In 1916, the last full producing year, the output approached 15,000,000 pounds of metallic copper annually. This, although large for Russia, is only one-quarter to one-tenth of the output of the large "porphyry" copper mines of the United States. A considerable output in gold was obtained yearly as by-product.

The published reports indicate that when the mine was closed down owing to "nationalization" some 3,000,000 tons of 3 per cent. ore still remained as reserve, established by development. Much of the ground is still unprospected, and besides important iron deposits which are worked on the property, an important discovery of nickel ore has been made.

The pre-war cost of producing copper at this property compared very favorably with the average cost at American copper mines. Following the political crash in Russia, the cost became prohibitive, and at the present time there is no demand for the product, even did the political conditions allow of the property's being operated. It will probably take three to five years to restore this property to its former productiveness, even after the restoration of peaceful conditions in the Urals.

Other Ural Copper Mines

Other copper-mining properties in the Urals were Sissert Co. (Ltd.), the Verk-Isset Co., the Bogoslof Co., the Revdinsk Co., and the Tanalyk Corporation (Ltd.). In the Kirghese-steppe region the Albazar Mines (Ltd.) and the Spassky Co. (Ltd.) also operated in a small way. The last three mines mentioned were controlled largely by British capital.

Both the Sissert and the Revdinsk properties near Ekaterinburg were in the development stage, but with good promises for the future, the ore being in many respects similar to Kyshtim. The Tanalyk property in the Orenburg district, although started as a copper mine, was proving to be a more important producer of gold than of copper when operations were suspended in 1917.

A most important copper deposit of the "porphyry"—that is, disseminated ore—variety is stated to have been partly prospected by drilling by the engineers of the Irtysh Corporation. This property is situated adjacent to the Ekibastus coal field, to the west of Pavlodar. In the published reports the company has merely referred to the deposit in a general way, but it is said to be of large dimensions.

Summary of Copper Situation

Altogether the production of copper in Russia and the Caucasus in pre-war days was small, not filling the demand. It was infinitesimal as compared with what will be possible when the known deposits are exploited. Siberia, unquestionably the world's greatest storehouse of copper as well as of gold, produced practically no copper previous to the closing down of the industries due to the revolution. The Spassky Co., previously referred to, produced a few million pounds annually, but with this exception the writer knows of no copper produced in Siberia.

It should be noted that the price of copper in London has dropped during the last eight months from £153 [$745] per ton to about £77 [$375] at last advices, so that notwithstanding the bounty of £23 [$112] per ton given by the Russian Government to copper producers it is not likely that domestic producers will be able to compete with imports for some years to come. Probably the first successful copper mining on any considerable scale will be in the porphyry deposits, which can be mined by open cut with steam shovels, a minimum of hand labor being required.

Lead, Silver and Zinc

The two well-known base-metal districts of Siberia are the West Altai and the Nertchinsk-Argun regions. A much less known region recently developed for the production of zinc is the Te-Tu-He region, about 200 miles north of Vladivostok, only 20 miles inland from the sea coast.

Notwithstanding the fact that the Nertchinsk mining district was known over 200 years ago, it, like the Altai region referred to, is still in the development stage. Both these districts are extensive, as large as whole States in the United States or Mexico, and contain deposits which are of great importance. Until the revolution they were both held as the private property of the Russian Crown.

Kluchevskaya Topka (active volcano), Kamchatka.

An antique system of administration retarded the development of lead and zinc mining in both the Altai and Nertchinsk regions and stifled any attempt at industry. A certain amount of silver was produced from rich surface ores during the last century and a half, largely by forced labor.

The Irtysh Corporation—Development of the Altai

In 1912 the Russo-Asiatic Corporation (Ltd.) was formed in London, and an engineer was sent to examine the so-called "cabinet" concessions in the West Altai. He selected as the best of the three largest mines the Ridderski Kope, situated about 50 miles northeast of Ust Kamennogorsk. A lease was obtained from the cabinet of the late Emperor, and the Irtysh Corporation (Ltd.), with a capital of £2,000,000 [$9,733,000], was founded to develop and operate this property. This company also obtained the control of the Ekibastus coal mines, formerly part of the Popof properties west of Pavlodar and connected with the Irtysh River by 50 miles of standard-gauge railway.

In the five years ended in 1917 another railway was constructed by this company connecting the Ridder and Sokolni mines with the Irtysh River; coke ovens and zinc retorts have been erected; a concentration plant has been erected at the mines, and a large amount of development and diamond drilling has been accomplished on the ore deposits. Some of the best mining and metallurgical talent has been employed in developing the process for treatment of the complicated base ores, and all preparations were made for a regular and profitable output of zinc, lead, silver, and gold, which are the four principal recoverable metals present in the ore.

It is estimated by competent engineers that the amount of ore in sight at the Ridder and its neighboring mine, the Sokolni, was sufficient on a conservative basis of cost to net the shareholders £10,000,000 [$48,665,000] in the course of 10 or 12 years after operations were well under way. This was only estimating ore to a moderate depth in two deposits, while over 12 other deposits of the famous "hornstone" were known on the property, where surface indications were of a similar character to these developed mines. Besides this, the coal mines of the company were under competent management and a large amount was spent in preparations for an assured annual production, both for coking purposes in smelting the ores and for filling contracts with the Trans-siberian Railway.

It should be noted that the estimated production of the Ridder mine in gold, merely as by-product, amounted to £1,000,000 [$4,866,500] annually, or as much as the average production of the Lenskoie Gold Mining Co., previous to 1915, which produced 25 per cent. of the output of Siberia

Other portions of the Altai zinc lead domain have been under development by the Russian Mining Corporation (Ltd.), of London, and this company in 1916 made copper discoveries on its property that may prove of importance.

Altogether, it is stated that over 4,000 prospects exist in the Altai region showing lead-silver values, only a very small percentage of which have been worked or even looked at during the last three or four decades.

Transbaikal Region—The Coast Region

The Nertchinsk mining region has not been the object of modern development. There are indications that it may yet become the seat of profitable base-metal mining, and it is perhaps fortunate for the future Siberian commonwealth that this great area has been protected as it were from half-hearted private exploitation in the past by the old "cabinet" system under which the convicts only "gophered" out the rich streaks of silver ore near the surface and did not attempt any systematic mining of the important low-grade bodies of lead and zinc.

The coast region, as has been stated, contains the Te-Tu-He zinc mine, which has produced in the last few years a notable quantity of high-grade ore and is not unlikely to be of importance in the future for the production of mixed base ores on a considerable scale. This region has the great advantage of being on the sea coast and therefore is not dependent on the domestic market for its concentrates and spelter produced. Ample deposits of coking coal are also available in the vicinity; therefore should the region of these ores prove extensive it is highly probable that the southern Sikota Aline may become the seat of an important lead and zinc smelting industry.

The Lena Gold Fields

Though gold mining in Siberia has been carried on for centuries, it was not until 1867 that Michael Sibiryakof located the famous Blagovyestchensk mine on the Nakatami, a branch of the Bodaibo Creek, tributary to the Vitim, and is said to have found by chance the deep-lying gravel which has since made this stream and the Bodaibo known wherever placer mining is talked of. The claim mentioned proved the richest gold gravel area of which we have record in the world, 1,000,000 cubic yards of bed-rock gravel having produced £3,330,000 [$16,205,000].

Bodaibo Creek, which may be safely estimated to have produced over £40,000,000 [$194,660,000] in 40 miles of length, is too well known to need description. It is but a fraction of the gold-bearing territory of the Vitim and Olekama districts, and although worked out by the present Lenskoie Co., there still remain important reserves of gold to be worked by modern contrivances.

Up to 1914 the methods pursued in mining the drifting ground by the Lenskoie Gold Mining Co were of that archaic description introduced into the Urals by some disciple of Agricola in the time of Catherine the Great. The so-called washing machines were of great historic interest, and one regretted that on account of their bulk it was impossible to transport them to some museum of antiquities in one of the world's great capitals.

Improvement in Methods—Recent Decline in Output.

Fortunately in 1913 Mr. Reuben E. Smith, a mining engineer and specialist on placer mining, was engaged by the company. He at once set to work to improve the methods employed, and in the course of three years, in the face of most intense opposition by the Lenskoie board and many of the local officials of the company, succeeded in greatly reducing the cost and increasing the gold output. The stealing of coarse gold from the drift faces and dumps, which for several years had averaged £300,000 [$1,450,000] annually, was reduced to less than $100,000 in 1915. This was the result of the introduction of all-the-year washing of gold instead of exclusive summer washing. A most ingenious system was developed by Mr. Smith, which allowed the gold to be washed every day of the year, even at the record winter temperature of 1914-15, when on the coldest day 88° below zero Fahrenheit was recorded. By this and other improvements, the introduction of standard Alaska sluices, and the saving of fine gold, that had formerly been lost, the output was gradually raised until in 1915 the record output of this property of £1,800,000 [$8,760,000] in gold was recovered in one year. This, in fact, was the largest output in that year of any gold mine, either quartz or placer, in the world.

Underground improvements, such as the recovery of timber put into the workings, the reduction of man and horse power, and all-round general cost-cutting factors had been introduced, and the Lenskoie property, so far as working cost and production were concerned, was getting fast in line with the world's well-administered mines. But unfortunately the board at Petrograd had engaged the doctor when the patient had nearly expired, and the inevitable fact remained that Bodaibo Creek was worked out. Therefore, irrespective of any political disturbances, the Lenskoie output began to decline in 1916 and has steadily done so since. Although it is reported that the property is still being operated, the 1919 output will probably not reach more than 20 per cent. of the 1915 output.

Other Gold-Producing Areas

New discoveries of drifting gravel are reported from eastern areas of the property remote from Bodaibo. While it is possible that these will lend for a time a new drifting life to the property, a thorough liquidation of the present organization will be necessary before even the richest gravel can be worked at a profit. Ancient poodage rights, imports, etc., exist on many of the best claims, serving to handicap their profitable exploitation even were all the unnecessary overhead charges eliminated.

Outside of the Lenskoie Co., the output of any one mine in the Siberian or Ural territory is insignificant. The aggregate pre-war annual output of Russia was £5,000,000 [$24,000,000] to £6,000,000 [$29,000,000] in gold. Of this sum the Lenskoie Co. annually contributed 25 to 30 per cent. Thus, notwithstanding the fact that Siberia promises to be the world's great gold-producing country of the future, it may be said to be at the turning point, where the alluvial gold is largely worked out and the initiation of quartz mining and the obtaining of gold as a by-product from base metal mines have not commenced.

Future of Siberian Gold Mining

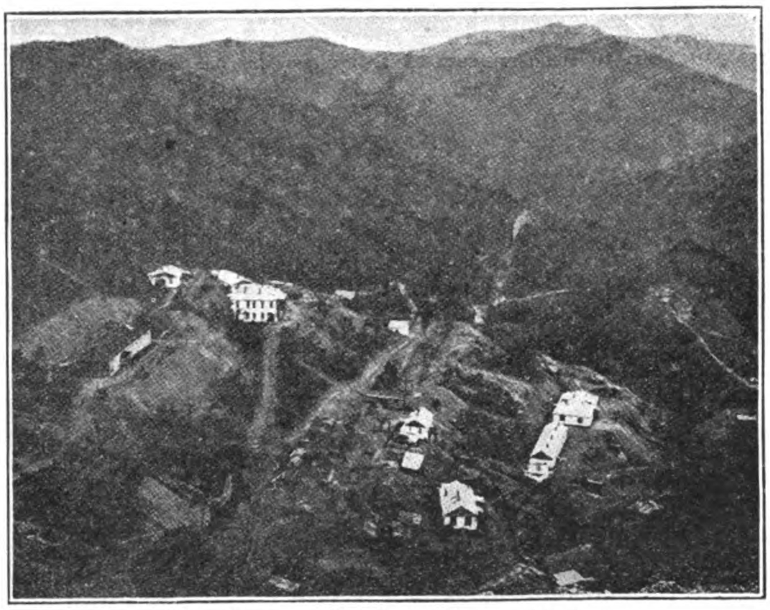
To select the areas where deep mining will be possible and to develop the deposits and select the proper processes for extraction of the metal will require the services of foreign engineers from America, South Africa, and Australia. There is no intrinsic reason why the Siberian output will not eventually equal or even exceed the present annual output of the Transvaal, but the evolution of the industry will be slow, as it has been in other countries.

Gold dredging, which has attained success in other countries, will also have a wide field, but up to the present it has hardly commenced. Out of some 50 dredges that have been installed in various districts in Siberia only about 5 are of any value as machines. Two of these are on the Pacific coast at the property of the Orsk Goldfields (Ltd.) and three are in the Urals at the property of the Nikolai Pavdinsk Co. Gold dredges are significant in increasing notably the gold production of a region when they are installed in multiple units on very large areas, since the recoverable tenor of the gravel on which they operate is generally very low—a few pence per cubic yard.

Platinum Dredges, Output and Deposits

The writer is credibly informed that 27 so-called platinum dredges in the Ural region, mostly on the Iss and Tagil fields, were sunk during the political disturbances. One may say that the loss of these mechanical contrivances is not greatly to be deplored. For the sake of the future of the platinum industry it is to be hoped they will remain scrapped and be replaced by modern dredges.

The entire pre-war platinum output averaged about 150,000 ounces troy annually and, so far as can be gathered, sank to 80,000 ounces in 1917. The Iss field, by far the most important, if worked intensively by dredges for 10 years with an annual output, say, of 300,000 ounces, would probably be exhausted. It is not likely that other platinum fields will be



Zinc Mines of Tetiukha (Tartary Straits).

discovered either in the Urals or elsewhere to take the place of this field when exhausted. It is also possible that certain zones of the Iss dunites may be found workable as a rock source of platinum, since it is known that the platinum occurs in the dunite in recoverable quantity. The same may be said regarding the adjacent less important fields of the Pavdinsk estate and the Tagil.

Borneo Timber Development

The development of the timber resources of British North Borneo upon a larger scale is the object of a combination of interests represented by the sale of the China-Borneo Co., of Hongkong, to Harrisons & Crossfield (Ltd.), of London, which took place December 29. The China-Borneo Co. is a corporation organized under the control of and enjoying a concession from and operating with the backing of the British North Borneo Co., which has held 11,070 shares of the subsidiary company's stock. A similar block of such stocks has been held by Harrisons & Crossfield, a British corporation interested in the development of Borneo's resources.

A considerable trade in hardwood and other timber has been developed in this part of the world by the China-Borneo Co., but the development has not been so great as has been deemed possible and profitable by those concerned and for some time plans have been maturing for the reorganization of the island's timber industry. It has been estimated that the new development will require from $2,500,000 to $3,750,000 gold, and it has been realized that it would be impossible to obtain such an amount of capital in the Far East for such an enterprise at the present time.

It also has been realized that the granting of a new concession to a new company by the British North Borneo Co. would involve a duplication of management expenses and possibly involve friction, while a new company embracing the resources of all interests would have greater authority, credit, and support than two or more concerns would have separately. The China-Borneo Co., therefore has been sold to what amounts to a new organization which is to have a new and extended concession in the colony. The transfer of interests was made for the sum of $828,000 Hongkong currency (which at the present time is substantially the same sum in American currency). This works out at $18 per share—a higher value than the stock ever has been quoted at.

It is understood that the whole change is in line with the plans of the British North Borneo Co. to develop such of its lands in the island as have not as yet been alienated for development. The change promises to affect profoundly the entire timber trade of the Far East and is likely to have some appreciable effect upon the timber and lumber trade of the United States along the Asiatic coast.

Shanghai Tramway Returns

The following is the Traffic Return of the Shanghai Tramways (Foreign Settlement) for the month of April, 1920, and for 4 months ended 30th April, 1920, with figures for the corresponding periods last year :—

	April, 1920.	April, 1919.
Gross Receipts	$192,111.09	$166,176.68
Loss by currency depreciation	50,023.25	41,221.68
Effective Receipts	Mex.$142,067.84	Mex.$124,955.00
Percentage of loss by currency depreciation	27.36	26.02
Car Miles run	391,247	360,420
Passengers Carried	8,560,973	7,546,743
	4 Months ended 30th April, 1920.	4 Months ended 30th April, 1919.
Gross Receipts	$748,090.05	$630,121.76
Loss by currency depreciation	190,670.32	153,252.32
Effective Receipts	Mex.$557,419.73	Mex.$476,869.44
Percentage of loss by currency depreciation	26.82	25.55
Car Miles run	1,555,072	1,398,845
Passengers Carried	33,343,480	28,524,447

Auto Roads in China

If present plans are carried out China's longest modern highway will be completed within six months. It will extend from Peking to Tientsin, a distance of about 80 miles. The first section of this road, from Peking to Tungchow, 13 miles, was constructed in 1917. Through the efforts of the Peking Motor Club it is reported that a loan of $150,000 has been negotiated with the Banque Industrielle de Chine for the construction of a modern road between Tungchow and Tientsin. The remaining section of the new highway is now being surveyed. It will be 20-ft. wide and raised 2-ft. above the existing level. Four bridges will be built, and stations will be erected about 10 miles apart with repair shops and supplies of accessories and fuel. The cost of maintaining the road will be raised from toll fees. Service stations are especially necessary in China because native owners will not take the trouble to care for their machines properly. As long as an engine will run they do not bother with lubrication or stop to clean spark plugs or other parts. Closed cars, mostly coupés, with an occasional limousine, are chiefly in evidence, and red is the predominating color for car bodies. Local traffic rules give automobiles the right of way, and there is apparently no speed limit, except in the Legation Quarter, where it is posted as 15 miles per hour, but rarely observed.

The streets of the Tartar City are macadamized and kept in good condition; steam rollers of British make are used for this purpose. There are good motor roads from Peking to Tongshan, 25 miles north; to Tungchow, 14 miles east; and to the Summer Palace, 12 miles west. It has been suggested that the standing army be reduced and that the demobilized soldiers be employed in the construction of new highways.* If this plan should assume definite form and result in a national road system there would be a large and immediate expansion of the market for motor-cars. At any rate, the completion of the Peking-Tientsin highway will undoubtedly lead to the improvement of other roads, and sales of motor-cars will be greatly stimulated. Automobiles are increasingly popular among the wealthier classes of Chinese, and only the lack of roads limits their sale at present. Native officials and prosperous merchants insist upon the best cars regardless of price.

[*For five years the FAR EASTERN REVIEW has insistently urged this use of China's soldiery.]

Philippine Gutta-Percha

The impression that gutta-percha is not a product of the Philippine Islands is rife among merchants of the United States and European countries, and the matter has recently been brought to the attention of the Philippine Insular officials, who take this opportunity to state that this commodity is one of the exports of the Islands, and, at the present rate of production, the industry bids fair to rival that of the leading gutta-percha producing countries.

The fact that the centre of the gutta-percha market is in Singapore, and that all gutta-percha produced in the Philippines is shipped to that point, whence it is transhipped to the American and European markets, gives rise to this illusion of the merchants.

In 1915 gutta-percha was exported from the Philippine Islands to the amount of 31,650 kilos, valued at P.31,143, and the 1919 custom house figures show that 38,030 kilos were exported in that year, valued at P.36,942. There is a tendency among local dealers to ignore Manila as a possible distributing centre for their product, and much of the gutta-percha produced in the Islands finds its way to Singapore through the smaller ports of the southern Islands, without touching Luzon.

Proposed cable extensions in the United States, coupled with the many and varied uses to which gutta-percha may find application, point to the advisability of establishing a Philippine distributing centre in America and exporting the Philippine product direct to that country.

Motor Vehicle Situation in Japan

The centre of motordom in Japan is Tokyo; cars are usually imported by agents there and distributed thence over the country. About 99 per cent. of the motor vehicles imported during 1918 were of American origin. But there is a settled opinion in Japan that English and French makes of the higher grades are superior to the best class of American cars, and in future the Japanese who do have to consider the price will undoubtedly purchase European models when they are again available. The demand for automobiles was at its height in Japan when the armistice was signed; dealers had placed large orders in the United States, and these were mostly filled following the armistice. But, coincident with the business depression in Japan, lasting from November, 1918, to March, 1919, the demand for automobiles practically ceased. This left dealers heavily stocked, and some of them for a time were unable to pay the customs duties on their orders. The cars accumulated at the customs warehouse as a result, and a few were even sold by the authorities for charges. The remainder were gradually absorbed, however, or were reexported to Java, Shanghai, Straits Settlements, and other markets of the Far East. The market recovered, and in the fall of 1919 automobiles were being imported from the United States at the rate of about 150 per month.

Mention has been made of the bounties granted by the Japanese Government to encourage the use of motor trucks. In spite of liberal concessions, motor trucks have not been increasing very rapidly outside of Tokyo and Nagoya, nor can they come into very general use until roads and bridges are put into better condition. But the Japanese are fully aware of the advantages of motor transport, the question of roads is attracting wide attention, and it is probable that the next few years will see great improvements in road construction in Japan.

Accurate statistics are not available as to the number of motor cycles in Japan. But based upon the approximate number in the Kobe district, the total for the Empire may be placed at somewhat more than 2,000. The type in use are mostly of British and Japanese manufacture. American motor cycles are usually too large and heavy for the Japanese to use; and the high-speed types popular in America are not practicable for the road conditions in Japan, which rarely permit a speed of more than 20 miles an hour. The favorite motor cycle in Japan is a low-priced, one-cylinder machine with a two-speed gear, clutch, belt drive to the rear wheel, cable controls, and magneto ignition.

Because of its narrow roads Japan would appear to offer a better market for motor cycles than for automobiles. But such is not the case. One reason is that very few Japanese take up motor cycling as a sport; and this mode of travel is not sufficiently dignified to appeal to the wealthy classes. The purchasing power of the vast majority of the people is too low to admit of their possessing even this means of locomotion; hence the sale of motor cycles is restricted to the comparatively small class of moderately well-to-do natives and foreigners.

Japanese have 300 Million Invested in U.S.

The Japanese and the government of Japan have nearly $300,000,000 invested in the United States, says the Wall Street Journal. This represents the accumulation of balances built up throughout the period of the war, with the exception of some gold that has been shipped and funds invested in allied loans from time to time. The $300,000,000 is a call which Japan has on our gold. The Japanese government has invested a large part of its balances in United States certificates, which are payable in gold, if demanded.

It is stated, however, that there is no intention on the part of the Japanese at present to take gold from this country, or, in fact, to do anything that would have a detrimental effect upon the local credit situation. Gold will only be taken, in realizing upon these balances, as a last resort.

Japan is now making use of American credits to finance her purchases of cotton and other commodities from this country. Her purchases of cotton in this market are quite heavy at this time, and the movement will continue until about February. As an instance of this financing, the Yokohama Specie Bank at the beginning of this week invested $3,000,000 in ninety-day cotton bills going forward to Japan. By investing in Japanese bills in this way, the exchange rate is stabilized. The exchange rate on Japan is now $50.62 per 100 yen, as against the parity of $49.84. It is actually above the gold shipping point, which just now is $50.50. Before the war, when freight and insurance charges were less, the specie point was about $50.25.

The investment of Japanese balances here in this way will continue so long as the supply of bills lasts. It will relieve the American banks from financing these exports, and to that extent will help the local credit situation.

The Japanese government at one time had as much as $150,000,000 invested in United States Treasury certificates of indebtedness. It has now $88,000,000 in the loan certificates maturing next year. Of this amount $83,000,000 is in the series C-1920, maturing February 2, and $5,000,000 in series B-1920, maturing January 15. On December 15 $58,000,000 of tax certificates matured, and practically all were re-invested in the new certificates offered for subscription.

Whether the Japanese government will call in what is left of its balance when the certificates run out by importing gold will depend upon monetary conditions existing at that time. Japan will probably be able to keep exchange here at the gold shipping point by reason of financing her merchandise imports.

There is no intention, it is declared, of placing the Japanese balances at the disposal of the European allies, and thus help stabilize sterling and other allied exchanges. Even the existing large balances would be inadequate for that purpose.

Foreign Firm in Mongolia

Mr. I. B. Shefts, of the Andersen, Meyer & Co , Urga branch, has just returned from a seven months' itinerary through Mongolia, and brings with him a most encouraging report of conditions in China's great undeveloped north-west, says the " North China Star."

Great changes for the better are coming over the country since the cancellation of autonomy and the taking over of government by the Chinese, says Mr. Shefts. A new attitude of encouragement of foreign trade is noticeable. Many foreigners are entering the country, particularly Scandinavians and Americans.

Andersen, Meyer & Co. have established themselves in Mongolia by opening branches in Urga and very recently in Uliasutai, 800 miles from Urga and 2,000 from Kalgan. They operate their own motor-car routes and camel caravans over the vast plains. From Kalgan to Urga is 4½ to six days' travel by motor-car and a month by camel. The road is good with the exception of the high pass about fifty miles out of Kalgan. Travellers on the road pass, at frequent intervals, stalled motor-cars.

The political situation, says Mr. Shefts, is entirely calm and order prevails, although detachments of Chinese troops are daily marching from Urga for Kiatka to protect the frontier. Urga is a fine city with a large Chinese merchant population and a Russian community of about 2,000 which is self-policing.

Apparatus of the Marconi Co. has already arrived at Urga, states Mr. Shefts, for the new wireless system reaching from Urga to Uliasutai, Kaobdo and the Tibetan border. Telegraph communications are now clear from Urga direct to Kiatka, Petrograd and Moscow.

The Mongolian police have been officered by Chinese of the North-western Defence Army. The post-offices and all government offices have been taken over by General Li, the assistant of Hsu Shu-tseng. Chinese passports needed. All foreigners now entering Mongolia must be provided with Chinese passports, and negligence in this respect has got travellers into considerable difficulty. The great present need, says Mr. Shefts, is that Urga be made an open port, which it is not at present. It is expected that this matter will have the attention of the Chinese government shortly.

Port and Railway Schemes for South China

Dr. Sun Yat Sen's Third Program for the International Development of China—*Continued from April Issue*

The First Program for the International Development of China as devised by Dr. Sun Yat-sen was published in the FAR EASTERN REVIEW of June, 1919, and embraced: (1) the construction of a great Northern port on the Gulf of Pechihli; (2) the building of a system of railways from the great Northern port to the North-Western extremity of China; (3) the colonization of Mongolia and Turkestan; (4) the construction of canals to connect the inland waterway systems of North and Central China with the great Northern port; and (5) the development of the iron and coal fields in Shansi and the construction of an iron and steel works. In the FAR EASTERN REVIEW of August, 1919, the Second Program was published and comprised (1) a great Eastern port; (2) the regulation of the Yangtze channels and embankments; (3) the construction of river ports; (4) the improvement of existing canals and waterways in connection with the Yangtze, and (5) the establishment of large cement works.

By Dr. Sun Yat-sen, ex-President of China.

Part III.—The Construction of the Southwestern Railway System of China

THE southwestern part of China comprises Szechuan, the largest and richest province of China Proper, Yunnan, the second largest province, Kwangsi and Kweichow which are rich in mineral resources, and a part of Hunan and Kwangtung. It has an area of 600,000 square miles, and a population of over 100,000,000. This large and populous part of China is almost untouched by railways, except a French line of narrow gauge from Laokay to Yunnanfu, covering a distance of 290 miles.

There are great possibilities for railway development in this part of the country. A network of lines should radiate fan-like from Canton as pivot to connect every important city and rich mineral field with the Great Southern Port. The construction of railways in this part of China is not only needed for the development of Canton but also is essential for the prosperity of all the southwestern provinces. With the construction of railways rich mines of various kinds could be developed and cities and towns could be built along the lines. Developed lands are still very cheap and undeveloped lands and those with mining possibilities cost almost next to nothing even though not state owned. So if all the future city sites and mining lands be taken up by the government before railway construction is started, the profit would be enormous. Thus no matter how large a sum is invested in railway construction, the payment of its interest and principal will be assured. Besides, the development of Canton as a world port is entirely dependent upon this system of railways. If there be no such network of railways traversing the length and breadth of the southwestern section of China, Canton could not be developed up to our expectations.

The southwestern section of China is very mountainous, except the Canton and Chengtu plains, which have an area of from 3,000 to 4,000 square miles each. The rest of the country is made up almost entirely of hills and valleys with more or less open space here and there. The mountains in the eastern part of this section are seldom over 3,000-ft. high but those near the Tibetan frontier generally have an altitude of 10,000-ft. or more. The engineering difficulties in building these railways are much greater than those of the northwestern plain. Many tunnels and loops will have to be constructed and so the construction expenses of the railway per mile will be greater than in other parts of China.

With Canton as the terminus of this system of railroads, I propose that the following lines be constructed :—

(*a*) The Canton-Chungking line viâ Hunan.
(*b*) The Canton-Chungking line viâ Hunan and Kweichow.
(*c*) The Canton-Chêngtu line viâ Kweilin and Luchow.
(*d*) The Canton-Chêngtu line viâ Wuchow and Suifu.
(*e*) The Canton-Yunnanfu-Tali-Tengyueh line ending at the Burma border.
(*f*) The Canton-Szemao line.
(*g*) The Canton-Yamchow line ending at Tunghing, on the Annam border.

(*a*) The Canton-Chungking line viâ Hunan. This line will start from Canton and follow the same direction as the Canton-Hankow line as far as the junction of the Linkiang with the North River. From that point the railroad turns in to the valley of Linkiang, and follow the course of the river above the city of Linchow. There it crosses the watershed between the Linkiang and the Taokiang and proceeds to Taochow, Hunan. Thence it follows the Taokiang to Yungchow, Paoking, Sinhwa and Shenchow, and up to Peiho across the boundary of Hunan into Szechuan by Yuyang. Then it follows the Wukiang Valley to Fowchow on the Yangtze. At that point the railroad should cross the Yangtze to the left bank then go up to Changshow and Kiangpei and cross the Kialing Kiang to Chungking. This railway which has a total length of about 900 miles passes through a rich mineral and agricultural country. In the Linchow district north of Kwangtung, rich coal, antimony, and wolfram deposits are found; in southwestern Hunan tin, antimony, coal, iron, copper, and silver; and at Yuyang, east of Szechwan, antimony, and quicksilver. Among agricultural products found along this line we may mention sugar, groundnuts, hemp, tung oil, tea, cotton, tobacco, silk, grains, etc. There is also an abundance of timber, bamboo and various kinds of forest products.

(*b*) The Canton-Chungking line viâ Hunan and Kweichow. This line is about 800 miles in length, but as it runs in the same track with line (*a*) from Canton to Taochow, a distance of about 250 miles, it leaves only 550 miles to be accounted for. This line, therefore, actually begins at Taochow, Hunan, and goes through the northeastern corner of Kwangsi passing by Chuanchow, and then through the southwestern corner of Hunan passing by Chengpu and Tsingchow. Thence it enters into Kweichow by Sankiang and Tsingkiang and crosses a range of hill to Chengyuan. From Chengyuan this line has to cross the watershed between Yuan Kiang and Wukiang to Tsunyi. From Tsunyi it will follow the trade route which leads to Kikiang and Chungking. This railway will also pass through rich mineral and timber districts.

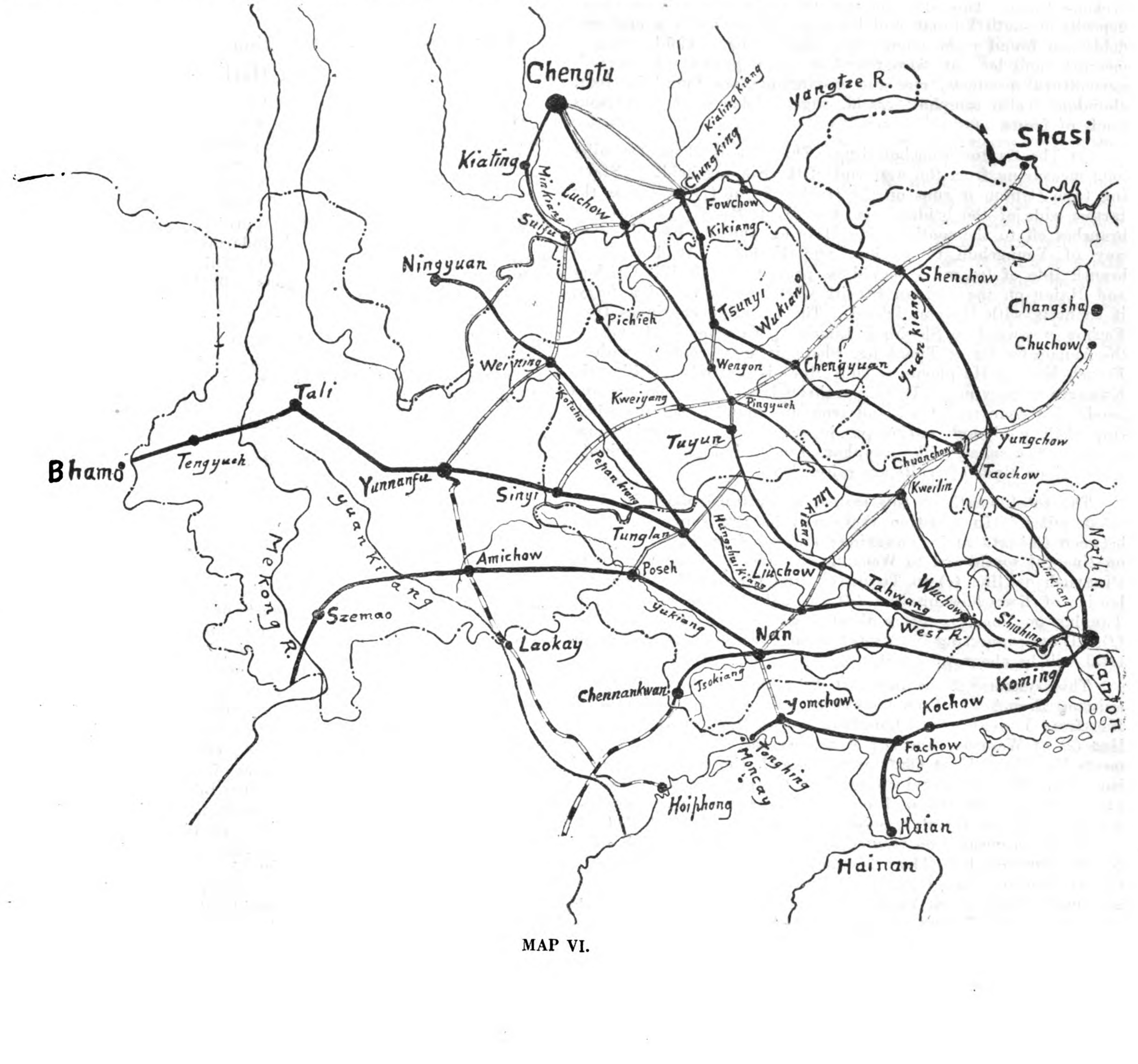
(*c*) The Canton-Chêngtu line viâ Kweilin and Luchow. This line is about 1,000 miles long. It runs from Canton directly west to Samshui, where it crosses the North River to the mouth of Suikong. Then, it ascends the valley of the same name to Szewui and Kwongning. Next, it enters into Kwangsi at Waisap, thence to Hohsien and Pinglo. From there it follows the course of the Kweikiang up to Kweilin. Thus the rich iron and coal fields that lie between these two provincial capitals, Canton and Kweilin, will be tapped. From Kweilin the road turns west to Yungning and then proceeds to follow the Liukiang valley into Kweichow province at Kuchow. From Kuchow it goes to Tukiang and Pachai and following the same valley it crosses a range of

hills into Pingyueh, thence it goes across the Yuankiang watershed into the Wukiang valley at Wengan and Yosejen. From Yosejen it follows the trade route through Luipien hills to Jenhwai, Chishui and Nachi. Then it crosses the Yangtzekiang to Luchow. From Luchow, it runs through Lungchang, Neikiang, Tzechow, Tseyang and Kienchow to Chêngtu. The last part of the line traverses very rich and populous districts of the famous Red Basin of Szechwan province. The middle portion of this line between Kweilin and Luchow lies in a very rich mineral country which possesses great possibilities for further development. This line will open up a thinly populated part for the crowded districts at both ends of the line.

(*d*) The Canton-Chêngtu line viâ Wuchow and Suifu. This line is about 1,200 miles in distance. It commences at the west end of the Samshui bridge which crosses the North River at that point for line (*c*), and following the left bank of the West River enters the Shiuhing Gorge to the Shiuhing city. It passes Takhing, Wuchow and Tahwang along the same bank. While the river here turns southwestwards the line turns northwestwards to Siangchow and then crosses Liukiang to Liuchow and Kingyuan. Then it goes to Szegenhsien and across the Kwangsi and Kweichow border to Tushan and Tuyun. From Tuyun the line turns more westerly to Kweiyang, the capital of Kweichow Province. Next, it proceeds to Kiensi and Tating and then leaving the Kweichow border at Pichieh it enters Yunnan at Chenhiung. Turning northward to Lohsintu and crossing the Szechwan border at that point, it proceeds to Suifu. From Suifu the road follows the course of the Minkiang, passes by Kiating and enters the Chêngtu plain to Chêngtu, capital of Szechwan. This line runs from one densely populated district to another and passes through a wide strip of thinly populated and undeveloped country in the middle. Along its course many rich iron and coal fields, silver, tin, antimony and other valuable metal deposits are found.

(*e*) The Canton-Yunnan-Tali-Tengyueh line. This line is about 1,300 miles in length from Canton to the Burma border at Tengyueh. The first 300 miles of the line from Canton to Tahwang will be the same as line (*d*). From the Tahwang junction this line branches off to Wusuan and following in a general way the course of the Hungshui Kiang passes through Tsien Kiang and Tunglan. Then it cuts across the southwestern corner of Kweichow province passing by Sinyihsien and thence enters Yunnan province at Loping and by way of Luliang to Yunnanfu, the capital of the province. From Yunnanfu this line runs through Tsuyung to Tali, then turns southwestwards to Yungchang and Tengyueh ending at the Burma border.

At Tunglan, near the Kweichow border in Kwangsi, a branch line of about 400 miles should be projected. This line should follow the Pepan Kiang valley, up to Kotuho, and Weining. Thence it enters Yunnan at Chaotung, and crosses the Yangtze Kiang at Hokeow, where it enters Szechwan. Crossing the Taliang mountain, it goes to Ningyuan. This branch line taps the famous copper field between Chaotung and Ningyuan, the richest of its kind in China.



MAP VI.

The main line running through the length of Kwangsi and Yunnan from east to west, will be of international importance, for at the frontier it will join the Rangoon Bhamo line of the Burmese Railway System. It will be the shortest road from India to China. It will bring the two populous countries nearer to each other than now. By the new way the journey can be made in a few days, whereas by the present sea-route it takes as many weeks.

(*f*) The Canton-Szemae line. This line to the border of Burma is about 1,100 miles long. It starts from south of Canton, passes Fatshan, Kunshan, and crosses the West River from Taipinghü to Samchowhü. Thence it proceeds to Koming, Sinhing, and Loting. After passing Loting it crosses the Kwangsi border at Pingho, and proceeds to Junghsien and then westward, crossing the Yukiang branch of the West River, to Kweihsien. It runs north of Yukiang to Nanning. At Nanning a branch line of 120 miles should be projected. Following the course of the Tsokiang it goes to Lungchow where it turns southward to Chennankwan on the Tongking border to join the French line at that point. The main line from Nanning proceeds in the same course as the upper Yukiang to Poseh. Then it crosses the border into Yunnan at Poyai, and by way of Pamen, Koukan, Tungtu and Putsitang to Amichow, where it crosses the French Laokay-Yunnan line. From Amichow it proceeds to Linanfu, Shihping, and Yuankiang where it crosses the river of the same name. Thence it passes through Talang, Puerhfu and Szemao and finally ends at the border of Burma near the Mekong River. This line taps the rich tin, silver, and antimony deposits of south Yunnan and Kwangsi, while rich iron and coal fields are found right along the whole line. Gold, copper, mercury, and lead are also found in many places. As regards agricultural products, rice and groundnuts are found in great abundance, also camphor, cassia, sugar, tobacco, and various kinds of fruits.

(*g*) The Canton-Yamchow line. This line is about 400 miles long measuring from the west end of the Sikiang bridge. Starting from Canton it runs on the tracks of line (*f*) as far as the farther side of the bridge over the West River. Thence it branches off to the southwest to Hoiping and Yanping, and by way of Yeungchun to Kochow and Fachow. At Fachow, a branch line of 100 miles should be projected to Suiki, Luichow and Haian on the Hainan Straits where, by means of a ferry, it connects with Hainan Island. The mainline continues from Fachow westward to Sheshing, Limchow, Yamchow and ends on the Annam border at Tunghing, where it may connect with a French line to Haiphong. This line is entirely within the Kwangtung province. It passes through a very populous and productive country. Coal and iron are found along the whole line while gold and antimony, in some parts. Agricultural products, as sugar, silk, camphor, ramie, indigo, groundnuts, and various kinds of fruits are raised here.

The total length of this system as outlined above is about 6,700 miles. In addition there will be two connecting lines between Chêngtu and Chungking; another from east of Tsunyi on line (*b*) southward to Wengan on line (*c*); another from Pingyueh on line (*c*) to Tuyun on line (*d*); another from the border of Kweichow on line (*d*) through Nantan and Noti to Tunglan on line (*e*), thence through Szecheng to Poseh on line (*f*). These connecting lines total about 600 miles. So the grand total will be about 7,300 miles.

This system will be intersected by three lines. First, the existing French line from Laokay to Yunnanfu with a projected line from Yunnanfu to Chungking crosses line (*f*) at Amichow, line (*e*) at Weining, line (*d*) at Suifu, line (*c*) at Luchow, and meets lines (*a*), (*b*) at Chunking. Second, the projected British line from Shasi to Sinyi crosses line (*a*) at Shenchow, line (*b*) at Chenyuen, line (*c*) at Pingyueh, line (*d*) at Kweiyang and a branch of line (*e*) at a point west of Yungning. Third, the projected American line from Chuchow to Yamchow crosses line (*a*) at Yunchow, line (*b*) at Chuanchow, line (*c*) at Kweilin, line (*d*) at Liuchow, line (*e*) at Tsienkiang, line (*f*) at Nanning, and meets line (*g*) at Yamchow. Thus, if this system and the three projected French, British, and American lines are completed, Southwestern China would be well provided with railway communications. See Map VI.

All these lines will run through the length and breadth of a vast mineral country, in which most of the essential and valuable metals of the world are found. There is no place in the world which possesses as here so many varieties of rare metals, such as wolfram, tin, antimony, silver, gold, and platinum and at the same time so richly provided with the common but essential metals, such as copper, lead and iron. Furthermore, almost every district in this region is abundantly provided with coal, so much so that there is a common saying: "Mu mei pu lih cheng," that is, "Nobody would build a city where there is no coal underneath." The idea was that in case of a siege those within the city might obtain fuel under the ground. In Szechwan, Petroleum and natural gas are also found in abundance.

Thus, we see that this Southwestern Railway System for the development of mineral resources in the mountainous regions of Southwestern China is just as important as the Northwestern Railway System is for the development of agricultural resources in the vast prairies of Mongolia and Turkestan. These railway systems are a necessity to the Chinese people and a very profitable undertaking to foreign capitalists. They are of about equal length, *viz.*— about 7,000 miles. The cost per mile of the Southwestern system will be at least twice that of the North-western System, but the remuneration from the development of mineral resources will be many times that from the development of agricultural resource.

Part IV.—The Construction of Coast Ports and Fishing Harbors

After planning the three world ports on the coast of China, it is time for me to go on and deal with the development of second and third class seaports and fishing harbors along the whole coast in order to complete a system of seaports for China. Recently, my projected plan of the Great Northern Port was so enthusiastically received by the people of Chili Province that the Provincial Assembly has approved the project and decided to carry it out at once as a provincial undertaking. For this object, a loan of $40,000,000 has been voted. This is an encouraging sign and doubtless the other projects will be taken up sooner or later by either the provinces or the Central Government, when the people begin to realize their necessity. I propose that four second class seaports and nine-third class seaports and numerous fishing harbors should be constructed.

The four second class seaports will be arranged so as to be placed in the following manner: one on the extreme north, one on the extreme south, and the other two midway between the three great world ports.

I shall deal with them according to the order of their future importance as follows:—

(*a*) Yingkow.
(*b*) Haichow.
(*c*) Foochow.
(*d*) Yamchow.

(*a*) Yingkow is situated at the head of the Liaotung Gulf and was once the only seaport of Manchuria. Since the improvement of Talien as a seaport, the trade of Yingkow has dwindled and lost half of its former business. As a seaport, Yingkow has two disadvantages, first, the shallowness of its approach from the sea and second, the blocking up by ice for several months in winter. Its only advantage over Talien is that it is situated at the mouth of the Liaoho and has inland water communication throughout the Liao valley in south Manchuria. The half of the former trade that it still holds at present against Talien is entirely due to the inland water facility. To make Yingkow outmatch Talien again in the future and become first in importance after the three great world ports, we must improve its inland water communication, as well as deepen its approach from the sea. In regard to the improvement of the approach work similar to the improvement of the Canton Approach should be adopted. Besides the construction of a deep channel, about twenty feet in depth, reclamation work should be

carried out at the same time. For, the shallow and extensive swamp at the head of the Liaotung Gulf could be turned into rice-producing land from which great profit could be derived. Regarding the inland water communication, not only the water system in the Liao valley but also the Sungari and the Amur Systems have to be improved. The most important work is the construction of a canal to connect these systems and this I shall now discuss in the next paragraph.

The Liaoho-Sungari Canal is the most important factor in the future prosperity of Yingkow. It is by this canal only that this port can be made the most important of the second class seaports in China and further the vast forest lands, the virgin soil and the rich mineral resources of North Manchuria can be connected by water communication with Yingkow. So this canal is all important for Yingkow, without which Yingkow as a seaport could at most hold her present position, a town of 60,000 to 70,000 inhabitants and an annual trade of $30,000,000 to $40,000,000 only and could never gain a place as the first of the second class seaports in China. This canal can be cut either south of Hwaiteh in a line parallel to the South Manchurian Railway between Fan Kia Tun and Sze Tung Shan, a distance of less than ten miles, or, north of Hwaiteh in a line between Tsing-shan-pao and Kaw-shan-tun, a distance of about fifteen miles. In the former case the canal is shorter but it makes the waterway as a whole longer, while in the latter case, the canal is about twice as long but it makes the waterway as a whole shorter between the two systems. In either line, there are no impassable physical obstacles. Both lines are on the plain but the elevation of the one may be higher than that of the other, which is the only factor that will determine the choice between the two. If this canal is constructed, then the rich provinces of Kirin and Heilungkiang and a portion of Outer Mongolia will be brought within direct water communication with China Proper. At present, all water traffic has to go by way of the Russian Lower Amur, then round a great detour of the Japan Sea before reaching China Proper. This canal will not only be a great necessity to Yingkow as a seaport, but will also have a great bearing on the whole Chinese nation economically and politically. With the Liaoho-Sungari Canal completed Yingkow will be the grand terminus of the inland waterway system of all Manchuria and North-eastern Mongolia; and with the approach from the sea deepened it will also be a seaport next in importance only to the three first class world ports.

(*b*) Haichow is situated on the eastern edge of the central plain of China. This plain is one of the most extensive and fertile areas on earth. As a seaport, Haichow is midway between the two great world ports along the coast line, namely the Great Northern and the Great Eastern Ports. It has been made as the terminus of the Hailan railway, the trunk line of central China from east to west. Haichow also possesses the facility of island water communication. If the Grand Canal and the other waterway systems are improved, it will be connected with the Hoangho Valley in North China, the Yangtze Valley in Central China, and the Sikiang Valley in South China. Its deep sea approach is comparatively good, being the only spot along the 250 miles of the North Kiangsu coast that could be reached by ocean steamers to within a few miles of the shore. To make Haichow a seaport for 20-ft. draft vessels, the approach has to be dredged for many miles from the mouth of the river before the four fathom line could be reached. Although possessing better advantages than Yingkow, in being ice free, Haichow, as a second class seaport, has to be content to take a second place after Yingkow, because she does not have as vast a hinterland as Yingkow, nor such a monopolistic position in regard to inland water communication.

(*c*) Foochow, the capital of Fukien Province, ranks third among our second class seaports. Foochow is already a very large city, its inhabitants being nearly a million. It is situated at the lower reach of the Min River, about 30 miles from the sea. The hinterland of this port is confined to the Min Valley with an area of about 30,000 square miles. The territory beyond this valley will be commanded by other coast or river ports, so the area commanded by this port is much smaller than that by Haichow. Consequently, it could be given only the third place in the category of second class seaports. The Foochow approach from the Outer Bar to Kinpei Entrance is very shallow. After this Entrance is passed, the river is confined on both sides by high hills and becomes narrow and deep right up to Pagoda Anchorage.

I propose that a new port should be constructed at the lower part of Nantai Island. For here land is cheap and there will be plenty of room for modern improvement. A locked basin for shipping could be constructed at the lower point of Nantai Island, just above Pagoda Anchorage. The left branch of the Min River above Foochow City should be blocked up so as to concentrate the current to flush the harbor at the south side of Nantai. The blocked-up channel on the north side of that island should be left to be reclaimed by natural process or may be used as a tidal basin to flush the channel below Pagoda Anchorage, if it is found necessary. The upper Min River must be improved as far as possible for inland water traffic. Its lower reach from Pagoda Anchorage to the sea must be trained and regulated to secure a through channel of 30-ft. or more to the open sea. Thus Foochow could also be made a calling port for ocean liners that ply between the world ports.

(*d*) Yamchow is situated at the head of Tongking Gulf in the extreme south of the China Coast. This city is about 400 miles west of Canton—the Great Southern Port. All the districts lying west of Yamchow will find their way to the sea by this port 400 miles shorter than by Canton. As sea transportation is commonly known to be twenty times cheaper than rail transportation, the shortening of a distance of 400 miles to the sea means a great deal economically to the provinces of Szechuan, Yunnan, Kweichow, and a part of Kwangsi. Although Nanning, an inland water port, lying northwest of Yamchow, is much nearer to the hinterland than Yamchow, yet it could not serve this hinterland as a seaport. So all the direct import and export trade will find Yamchow the cheapest shipping stage.

To improve Yamchow as a seaport the Lungmen River should be regulated in order to secure a deep channel to the city, and the estuary should be deepened by dredging and training to provide a good approach to the port. This port has been selected as the terminus of the Changsha-Yamchow Railway (Chu-Kin line) which will run from Hunan through Kwangsi into Kwangtung. Although the hinterland of this port is much larger than that of Foochow, yet I still rank it after that city because the area commanded by it is also commanded by Canton, the southern world port, and by Nanning, the river port, and so all internal as well as indirect import and export trade must go to the other two ports. It is only the direct foreign trade that will use Yamchow. Thus, in spite of its extensive hinterland it is very improbable that it could outmatch Foochow in the future as a second-class port.

Besides the three great world ports, and the four second-class ports, I propose to construct nine third-class ports along the China coast, from north to south, as follows:—

(*a*) Hulutao	(*d*) Ningpo	(*g*) Swatow
(*b*) Hoangho Port	(*e*) Wenchow	(*h*) Tienpak
(*c*) Chefoo	(*f*) Amoy	(*i*) Hoihou

(*a*) Hulutao is an ice-free and deep-water port, situated on the west side of the head of Liaotung Gulf, about 60 miles from Yingkow. As a winter port for Manchuria, it is in a more advantageous position than Talien for it is about 200 miles shorter by rail to the sea than the latter and is on the edge of a rich coal field. When this coal field and the surrounding mineral resources are developed, Hulutao will become the first of the third-class ports and a good outlet for Jehol and Eastern Mongolia. This port may be projected as an alternative to Yingkow, as the sole port of Manchuria and Eastern Mongolia, if a canal could be constructed to connect it with the Liaoho. It is only by inland water communication that Yingkow could be made the important port of Manchuria in the future and it will be the same in the case of Hulutao. So if inland water communication could be secured for Hulutao it will entirely displace Yingkow. If it is found to be economically cheaper in the long run to construct a Hulutao-Liaoho Canal than to construct a deep harbor at Yingkow, the Hulutao harbor will have to be placed on the northwest side of the peninsula instead

of on the southwest as at present projected. For the present site has not enough room for anchorage without building an extensive breakwater into the deep sea, which will be a very expensive work. Furthermore, there would not be room enough for city planning on the narrow peninsula, whereas on the other side, the city could be built on the mainland with unlimited space for its development.

I suggest that a sea wall be built from the northern point of Lienshanwan to the northern point of Hulutao to close up the Lienshan Bay and make it into a closed harbor, and an entrance be opened in the neck of Hulutao to the south side where deep water is found. This closed harbor will be over 10 square miles in extent but only some parts need to be dredged to the required depth at present. On the north side of the harbor, another entrance into the neighboring bay should be left open between the sea wall and the shore, and another breakwater should be built across the next bay. From there, a canal should be constructed either by cutting into the shore or by building a wall parallel with the coast line until it reaches the lowland from where a canal should be cut to connect with the Liaoho. If a canal is thus constructed for Hulutao, then it will at once take the place of Yingkow and become the first of the second-class ports.

(*b*) The Hoangho Port will be situated at the estuary of the Hoanghe on the southern side of the Gulf of Pechili, about 80 miles from our Great Northern Port. When the Hoangho regulation is completed its estuary will be approachable by ocean steamers, and a seaport will naturally spring up there. As it commands a considerable part of the northern plain in the provinces of Shantung, Chili, and Honan and possesses the facility of inland water communication, this port is bound to become an important third-class port.

(*c*) Chefoo is an old treaty port situated on the northern side of the Shantung Peninsula. Once it was the only ice-free port in the whole of North China. Since the development of Talien in the north and the development of Tsingtao in the south its trade has dwindled considerably. As a seaport, it will undoubtedly hold its own when the railroads in the Shantung Peninsula are developed, and the artificial harbor is completed.

(*d*) Ningpo is also an old treaty port, situated on a small river, the Yungkiang, in the eastern part of Chêkiang province. It has a good approach, deep water reaching right up to the estuary of the river. The harbor can be easily improved by simply training and straightening two bends along its course up to the city. Ningpo commands a very small but rich hinterland. Its people are very enterprising, and are famed for their workmanship and handicrafts second only to those of Canton. Thus Ningpo is bound to become a manufacturing city when China is industrially developed. But owing to the proximity of the Great Eastern Port, Ningpo will not likely have much import and export trade directly with foreign countries. Most of its trade will be carried on with the Great Eastern Port. So a moderate harbor for local and coast-wise traffic will be quite sufficient for Ningpo.

(*e*) Wenchow is situated near the mouth of the Wukiang in south Chekiang. This seaport has a wider hinterland than Ningpo, its surrounding districts being very productive. If railroads are developed it will undoubtedly command considerable local trade. At present the harbor is very shallow, unapproachable by even moderate-sized coastal steamers. I suggest that a new harbor at Panshiwei, north of Wenchow Island, be constructed. For this purpose, a dyke should be built between the northern bank and the head of Wenchow Island to block up the river entirely on the northern side of that island leaving only a lock entrance. The Wukiang should be led through the channel on the south side of the island for the purpose of reclaiming the vast expanse of the near-by shallows as well as for draining the upper stream. The approach from the southern side of Hutau Island to the port should be dredged. On the right side of the approach, a wall should be built in the shallow between Wenchow Island and Miau Island and in the shallows between Miau Island and Sanpam Island so as to form a continual wall to prevent the silt of Wukiang from entering into the approach. Thus a permanent deep channel will be secured for the new port of Wenchow.

(*f*) Amoy, an old treaty port, is situated on the island of Siming. It has a great, deep, and fine harbor, commanding a considerable hinterland in southern Fukien and Kiangsi, very rich in coal and iron deposits. This port carries on a busy trade with the Malay Archipelago and the Southeastern Asian Peninsula. Most of the Chinese residents in the southern islands, Annam, Burma, Siam, and the Malay States are from the neighborhood of Amoy. So the passenger traffic between Amoy and the southern colonies is very great. If railways are developed to tap the rich iron and coal fields in the hinterland, Amoy is bound to develop into a much larger seaport than it is at present. I suggest that a modern port be constructed on the west side of the harbor to act as an outlet for the rich mineral fields of southern Fukien and Kiangsi. This port should be equipped with modern plants in order to connect land and sea transportation together.

(*g*) Swatow is situated at the mouth of the Hankiang, at the extreme east of Kwangtung. In relation to emigration, Swatow is much similar to Amoy, for it also supplies a great number of colonists to southeastern Asia and the Malay Archipelago. So its passenger traffic with the south is just as busy as Amoy. As a seaport Swatow is far inferior to Amoy, on account of its shallow approach. But in regard to inland water communication, Swatow is in a better position as the Hankiang is navigable many hundred miles inland by shallow crafts. The country around Swatow is very productive agriculturally, being second only to the Canton Delta along the southern sea board. In the upper reaches of the Hankiang there are very rich iron and coal deposits. The approach to the port of Swatow can be improved easily by a little training and dredging, thus making it a fine local port.

(*h*) Tienpak is situated at a point on the coast of Kwangtung province between the estuary of the West River and the island of Hainan. Its surrounding districts are rich in agricultural products and mineral deposits. So a shipping port in this part is quite necessary. Tienpak can be made into a fine harbor by entirely walling in the bay from its west side and by opening a new entrance into the deep water in the neck of the peninsula southeast of the bay. Thus a good approach could be secured. The harbor is very wide but only a part need be dredged for large vessels and the rest of the space could be used by fishing boats and other shallow crafts.

(*i*) Hoihou is situated on the north side of Hainan Island on the strait of the same name, opposite Haian on the Luichow Peninsula. Hoihou is a treaty port, similar to Amoy and Swatow, supplying a great number of colonists to the south: Hainan is a very rich but undeveloped island. Only the land along the coast is cultivated, the central part being still covered by thick forests and inhabited by aborigines, and it is very rich in mineral deposits. When the whole island is fully developed, the port of Hoihou will be a busy harbor for export and import traffic. The harbor of Hoihou is very shallow, and so even small vessels have to anchor miles away in the roadstead outside. This is very inconvenient for passengers and cargoes, so the improvement of the Hoihou harbor is a necessity. Furthermore this harbor will be the ferry point between this island and the mainland for railway traffic when the railway systems of the mainland and the island are completed.

Fishing Harbors

As regards fishing harbors all our first-, second-, and third-class ports must also furnish facilities and accommodations for fishery. Thus all of these, i.e., three first-class ports, four second-class ports, and nine third-class ports, will be fishing harbors as well. But besides these sixteen ports, there is still room and need to construct more fishing harbors along the coast of China. I propose, therefore, that five fishing harbors be constructed along the northern coast, that is, along the coast of Fengtien, Chili, and Shantung, as follows :—

(1) Antung, on Yalu River, on the border of Korea.

(2) Haiyangtao, on the Yalu Bay, south of Liaotung Peninsula.

(3) Chinwangtao, on the coast of Chili, between the Liaotung and Pechili gulfs, the present ice-free port of Chili province.

(4) Lungkau, on the northwestern side of Shantung Peninsula.

(5) Shitauwan, at the southeastern point of the Shantung Peninsula.

Six fishing harbors should be constructed along the eastern coast, that is, along the coasts of Kiangsu, Chekiang, and Fukien, as follows:—

(6) Shinyangkang, on the eastern coast of Kiangsu, south of the old mouth of the Hoangho.

(7) Luszekang, at the northern point of the Yangtze Estuary.

(8) Changtukang, in the midst of Chusan Archipelago.

(9) Shipu, north of Sanmen Bay, east of Chekiang.

(10) Funing, between Foochow and Wenchow, east of Fukien.

(11) Meichow Harbor, north of Meichow Island, between Foochow and Amoy.

Four fishing harbors should be constructed on the southern coast, that is, along the seaboard of Kwangtung and Hainan Island, as follows:—

(12) Sanmei, on the eastern coast of Kwangtung, between Hongkong and Swatow.

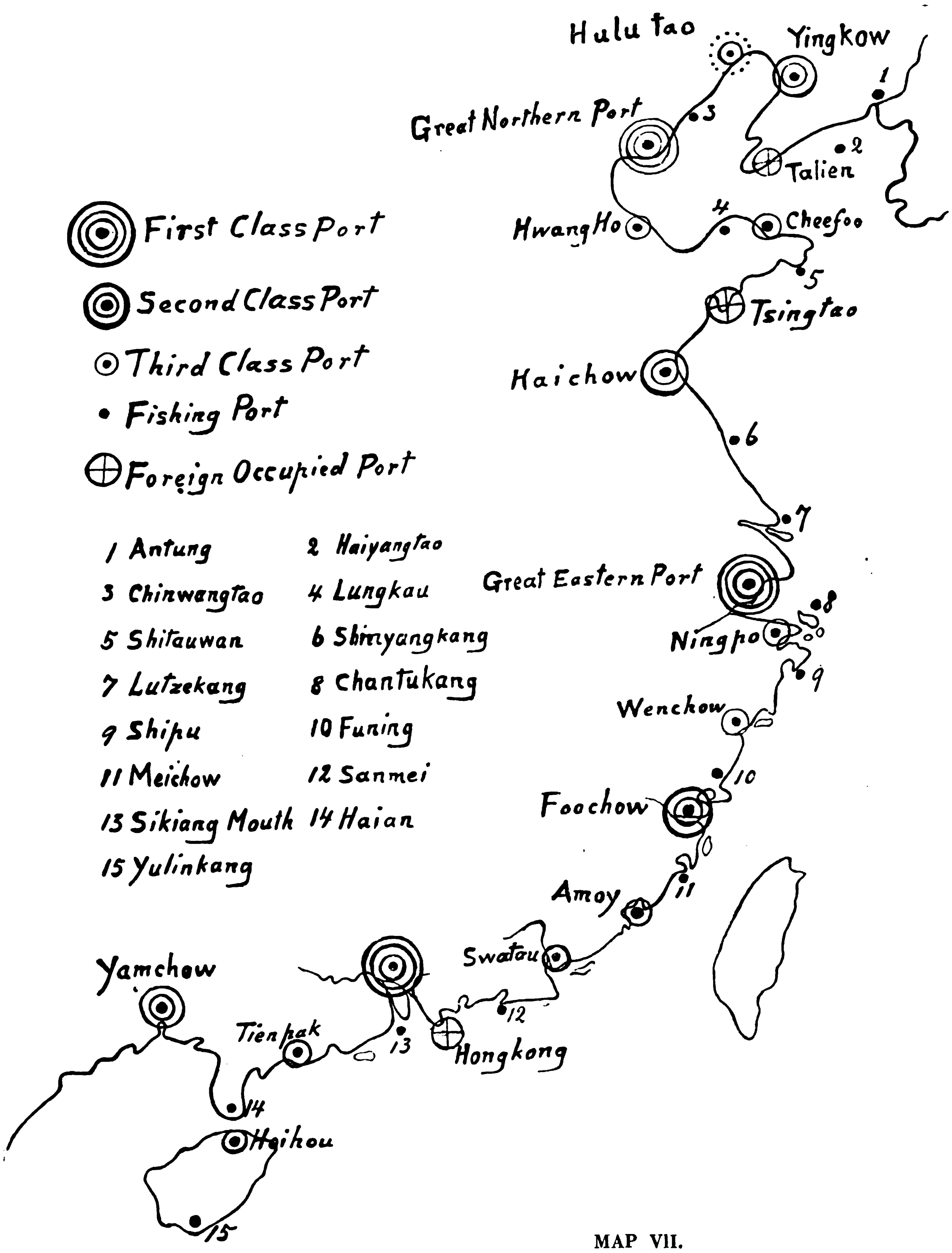
(13) Sikiang Mouth. This harbor should be on the northern side of Wangkum Island. When the Sikiang Mouth is regulated, the Wangkum Island will be connected with the mainland by a sea wall, so a good harbor site could thus be provided.

(14) Haian, situated at the end of the Luichow Peninsula opposite to Hoihou, on the other side of Hainan Strait.

(15) Yulinkiang, a fine natural harbor at the extreme south of the Hainan Island

These fifteen fishing harbors with the greater ports, numbering 31 in all, will link up the whole coast line of China from Antung, on the Korean border to Yamchow, near the Annam border, providing, on an average, a port for every 100 miles of coast line. This completes my project of seaports and fishing harbors for China.

At first sight objections might be raised that too many seaports and fishing harbors are provided for one country. But I must remind my readers that this one country, China, is as big as Europe and has a population larger than that of Europe. If we take a similar length of the coast line of western Europe we would see that there are many more ports in Europe than in China. Besides, the coast line of Europe is many times longer than that of China, and in every hundred miles of the European coast line there are more than one considerable-sized port. Take Holland, for instance. Its whole area is not larger than the hinterland of Swatow, one of our third-class seaports, yet it possesses two first-class ports, Amsterdam and Rotterdam, and numerous small fishing ports. Let us also compare our country with the United States of America in regard to seaports. America has only one-fourth the population of China yet the number of ports on her Atlantic coast alone is many times more than the number provided in my plan. Thus, this number of ports for China for the future is but a bare necessity. And I have considered only those that will pay from the beginning so as to adhere strictly to the principle of remuneration that was laid down at the outset of my first program. See map VII.



MAP VII.

Part V.—The Establishment of Shipbuilding Yards

When China is well developed according to my programs, the possession of an oversea mercantile fleet, of ships for coastal and inland water transportation, and of a large fishing fleet will be an urgent necessity. Before the outbreak of the late World War, the world's seagoing tonnage was 45,000,000 tons. If China is equally developed industrially, according to the proportion of her population, she would need at least 10,000,000 tons of oversea and coastal shipping for her transportation service. The building of this tonnage must be a part of our industrial development scheme. For cheap materials and labor can be obtained in the country, and so we could build ships for

ourselves much cheaper than any foreign country could do for us. And besides the building of a seagoing fleet, we have to build our inland water crafts and fishing fleets. Foreign shipping yards could not do this service for us on account of the impracticability of transporting such numerous small crafts across the ocean. Thus, in any case, China has to put up her own yards to build her inland water crafts and fishing fleets. So the establishment of shipbuilding yards is a necessary as well as a profitable undertaking from the beginning. The shipping yards should be established at such river and coastal ports that have the facility of supplying materials and labor. All the yards should be under one central management. Large capital should be invested in the project so as to procure a yearly output of 2,000,000 tons of various kinds of vessels.

All types of vessels should be standardized both in design and equipment. The old and wasteful types of inland water crafts and fishing boats should be replaced by modern efficient designs. The inland water crafts should be designed on the basis of certain standard drafts such as the 2-foot, 5-foot, and 10-foot classes. The fishing trawlers should be standardized into the one-day, the five-day and the ten-day service class. The coastal transports should be standardized into the 2,000-, the 4,000-, and the 6,000-ton class, and for oversea transports we should have standardized ships of 12,000-, 24,000-, and 36-000-ton classes. Thus, the many thousands of inland water crafts and fishing junks that now ply the rivers, lakes, and coasts of China may be displaced by new and cheaper crafts of a few standard types which could perform better service at less expense.

SUN YAT-SEN.

A Free Zone for Manila

"The government of the Philippine Islands will vote bonds sufficient to cover the expense necessary to the creation of this free zone and the construction of edifices, warehouses and docks proper to the same, together with other requirements for its proper administration. . . . There will be set aside P25,000 for the initial expenses of the free zone board in the preparation of plans and the compilation of data."

This paragraph is quoted from the Vamente free zone bill which was recently introduced into the lower house of the Philippine legislature, and the measure bids fair to win the approval of the lawmakers of that body.

The bill provides that the free zone at Manila be established and maintained by the secretary of commerce and communications, and that he takes action through a board consisting of the director of commerce and industry as president, and the insular of customs and the director of the bureau of public works as members.

This board will administrate the zone, the collector of customs making the rules for the handling of vessels and cargo, vessels to be free from the usual port entry and pilotage charges.

The board will recommend the site for the zone. It is believed among government circles, however, that the Tondo beach site recently recommended by Paul P. Whitham, United States Trade Commissioner, investigating trade and harbor conditions in the Far East for the federal government. Mr. Whitham estimates P80,000,000 as the final cost of the free zone development. It is also recommended that the zone be walled off and properly guarded to prevent smuggling.

That a free zone is the greatest individual requirement in making Manila the first port of the Orient is a current fact that has long been conceded by the most cynical "wat blanket business man" in the Philippines.

Manila is situated on the greatest trade route in the world, and in so far as the Orient is concerned, is the most centrally located point. Its harbor is at the southern end of Manila Bay, a great naturally sheltered body of water about thirty miles long, and is further protected by a breakwater over a mile in length. Its present water front is studded with three large piers, a fourth under construction by the government, and a fifth will soon be started by the Pacific Mail Steamship Company.

Under the provisions of the Free zone bill, goods shipped to Manila may be stored in the free zone and ultimately transhipped to any other country without paying any of the port charges and taxes levied on a cargo imported for Philippine consumption. This would mean a leap in total tonnage and would also solve the freight problem, as many of the ships transhipping cargo at Manila could load Philippine exports which otherwise would lay on the dock waiting the straight schedule ships.

Chinese Stamp Tax in Foreign Concessions

The Diplomatic Body at Peking has agreed with the Government of China that the Chinese Stamp Tax shall be enforced on Chinese residents within the limits of the Foreign Concessions in China and a joint proclamation in the names of the Bureau of Foreign Affairs for Chihli and the Sub-Department of Stamp Duty for Chihli has been issued setting forth the origin and steps taken to enforce this law within the Foreign Concessions and giving a schedule of the duties to be collected.

The Chinese Authorities issuing this joint proclamation requested that it should be posted in the various Foreign Concessions that the Chinese subjects resident within the Concessions should be instructed lawfully to obey the regulations as set forth.

The Diplomatic Body in Peking agreed to the collection of the stamp tax in the foreign concessions only with the proviso that it is a tentative step, accepted with the clear understanding that the rights of the foreign administrations and of foreign nationals in the settlements shall not suffer any inconvenience nor appear to be infringed thereby. In this latter case the measure is to be modified or if necessary cancelled.

The tax which is collectable upon practically all written instruments used in connection with business transactions, involving amounts of $1.00 or over is 1 cent, and in some cases where the amount is over $10 the tax is 2 cents. On bills of lading, insurance policies, bills of exchange, promissory notes, wills and partnership agreements the schedules run from 1 cent to $1.50.

Foreign police officers in the concessions are empowered to enforce the payment of the tax. Persons who fail to pay the tax are subject to fines, to be collected by the consulate of the concession in question. The stamps are to be on sale in all Chinese Post Offices. The regulations go into effect on May 1. No funds are made available for the enforcement of the tax provisions by the foreign officials, except that they are to retain half on the fines collected from delinquents.—"North China Star."

Japanese Ownership of Railroads

Government ownership of railroads in Japan has been a success, because it has found favor with the great majority of the people from its inception, according to Mr. Yosuki Tsurumi, secretary of the imperial government railroads.

"The divided attitude of the American public on the question of government ownership, however," said Mr. Yosuki, "probably would make the permanent taking over of the lines in this country precarious.

"The success of government ownership of railroads depends entirely on the support given the movement by the general public and the hundreds of thousands of employes of the railroads. In Japan, almost all the lines were nationalized 14 years ago, and the returns since have averaged six to seven per cent. on the invested capital.

"The entire profits are used for the improvement and extension of the roads. We have managed to do this because we have had the confidence and support of the public and the employes, all of whom feel that better transportation was and is possible through government control.

"As we have no dividends to pay, we have been able to pay better wages to our employes, as much of the money formerly turned back to stockholders is now available to pay workers more in their weekly and monthly envelopes.

"The employes also further favor government ownership because it offers them greater security in their positions. In a country like Japan opportunities for working people are fewer than they are in the United States, and it is more essential that the workers obtain permanent positions."—From *Christian Science Monitor*.

Improvement of the Physical Conditions of Open Lines in Japan

Some Engineering Features of the Atami Deviation

THE railways in Japan, as originally laid, were almost exclusively single track lines, and it was not till 1881 that the first section of the Tokaido Line, between Tokyo and Yokohama, was double-tracked. Duplication work was then pushed on throughout the entire line between Tokyo (Shimbashi) and Kobe and completed in 1913. Similar work was carried out on some of the purchased trunk lines, and good progress has been made in this respect, the second or more main tracks increasing from 466 miles in 1907-8 to 804 miles in 1916-17, which means a gain of 338 miles in ten years. The duplication work completed or in hand is shown below:—

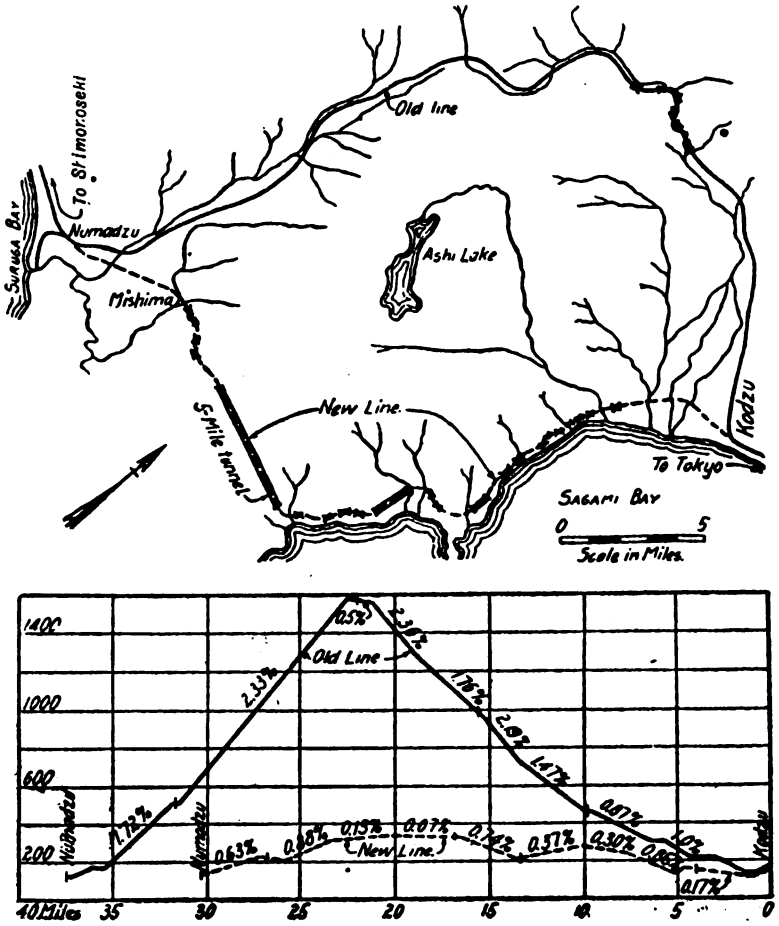
Line	Work completed or in progress	Work projected
Tokaido Main ..	Duplication.	Four tracks between Tokyo and Kozu and Kyoto and Kobe.
Yokosuka	Duplication.	
San-yo	Duplication between Kobe and Yoshinaga; work on Himeji-Kamigori in progress.	Duplication between Kobe and Hiroshima.
North Eastern ..	Duplication between Ueno and Utsunomiya; six tracks between Ueno and Nippori and four tracks between Nippori and Tabata.	Duplication between Ueno and Fukushima.
Yamate	Duplication between Shinagawa and Tabata.	Four tracks between Shinagawa and Tabata.
Joban	Duplication between Nippori and Ueno; Tomobe and Mito and Yumoto and Taira; work on Mito-Isohara in progress.	Duplication between Ueno and Taira.
Central Main ..	Duplication between Manseibashi and Kokubunji.	Duplication between Tokyo and Hachioji.
Shin-Etsu Main ..	Duplication between Shinonoi and Nagano in progress.	Duplication between Shinonoi and Naoetsu.
Kagoshima Main..	Duplication between Moji and Akama; work on Akama-Tosu in progress.	Duplication between Moji and Tosu.
Chikuho Main ..	Duplication between Orio and Iizuka and Nogata and Ida.	Four tracks between Orio and Nogata in progress.
Hakodate Main ..	Duplication between Temiya and Iwamizawa.	
Muroran Main ..	Duplication between Muroran and Wanishi and duplication of Yubari branch.	Duplication between Oiwake and Muroran and Oiwake and Yubari.

Deviation and Grade Reduction

The mountainous character of the country involved the use of heavy grades and sharp curvature. As traffic increased, however, it was found necessary to resort to reconstruction, with a view to reducing gradients and improving the alignment, while the increased speed of the trains has called for the adjustment of the reverse curvature. These improvements have been carried out wherever necessary, as shown in the subjoined statement:—

Line	Length	Cost	Remark
Complete:—	*mile*	*yen*	
Tokaido Main	2.8	460,000	For increasing capacity of line.
Kagoshima Main	7.4	1,400,000	,,
Hakodate Main	18.6	657,483	,,
O-U Main	.8	450,000	Collapse of tunnel from flood.
Central	.5	177,000	,,
Tokaido	4.0	120,000	Station improvement.
Sanuki	.8	841,000	,,
Hokuriku	2.0	125,000	,,
Kansai	2.4	60,000	Link to Sakuranomiya.
Incomplete:—			
Tokaido Main { Kozu-Numazu	87.4	24,240,000	For increasing capacity of line.
Tokaido Main { Kyoto-Otsu	10.0	6,000,000	For increasing capacity of line.
North-Eastern Main	25.4	2,317,438	,,
Hakodate Main	10.0	240,000	,,
San-yo	3.7	467,000	Riparian improvement.

Most important reconstruction work is now under way at two places on the Tokaido Line, i.e., the Kozu-Numazu and the Otsu-Kyoto section. The Tokaido (Tokyo-Kobe) Line is one of the main arteries of the State system, and its duplication was completed in 1913. The gradient of the line is mostly 1 in 100, with the sharpest curve of 15ch. radius, but, as originally constructed, the 1 in 40 to 50 maximum grade was allowed at places. Such is the section between Kozu and Numazu, where the line is led on a gradient of 1 in 40 over the steep Hakone pass. In order to relieve the strain placed upon this mountainous section by the growing traffic, the plan of laying a detour viâ Atami was adopted. The new route follows a straighter alignment and will reduce the ruling gradient to one per cent., while shortening the distance from 37 miles to 30 miles. On the other hand it involves the boring of a tunnel, 5 miles in length, the longest of the kind in Japan.



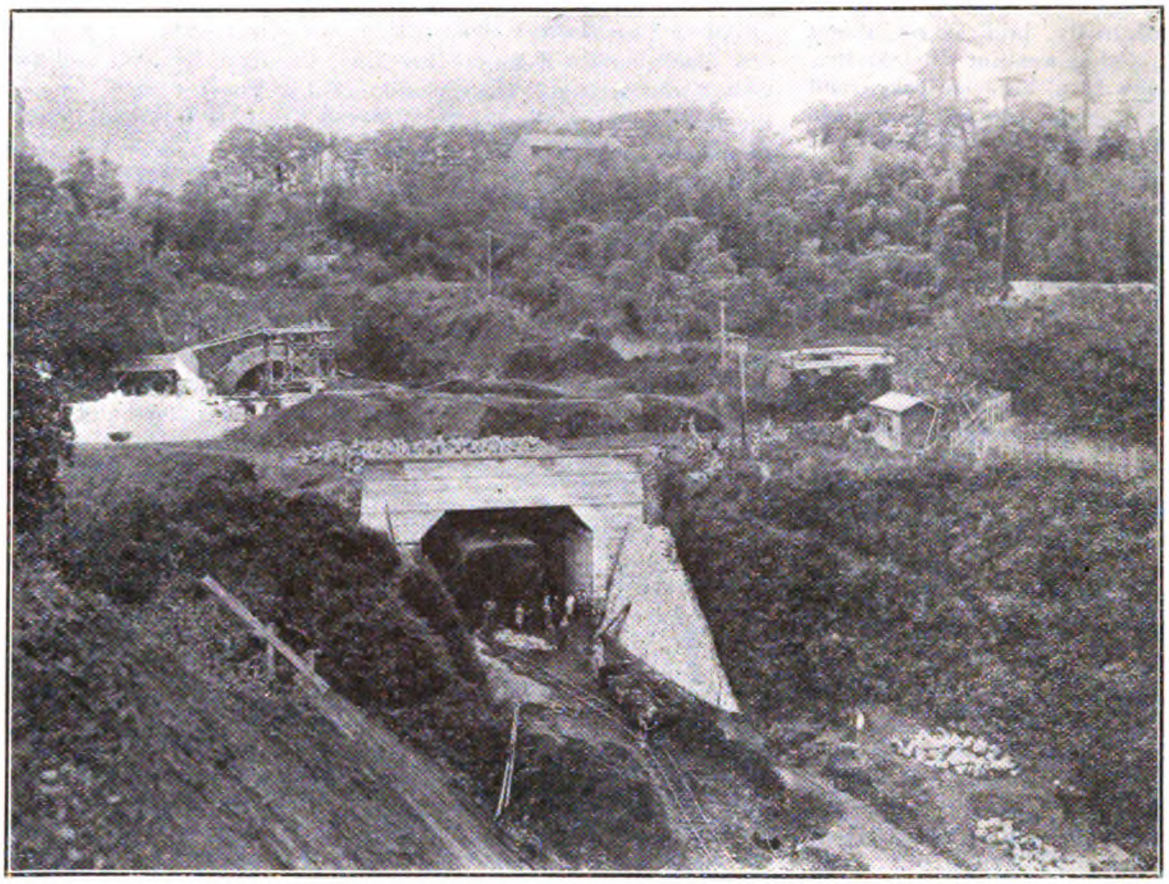
Map and Profile of the Atami Deviation.

The new line starts at Kozu Station and, passing the town of Odawara, follows a southerly direction along the coast on the Sagami Bay as far as Atami, a famous geyser spring resort. Thence it traverses a tunnel of about 5 miles and reaches Mishima. From this town it runs westward almost parallel to the existing track until it joins the latter at Namazu Station.

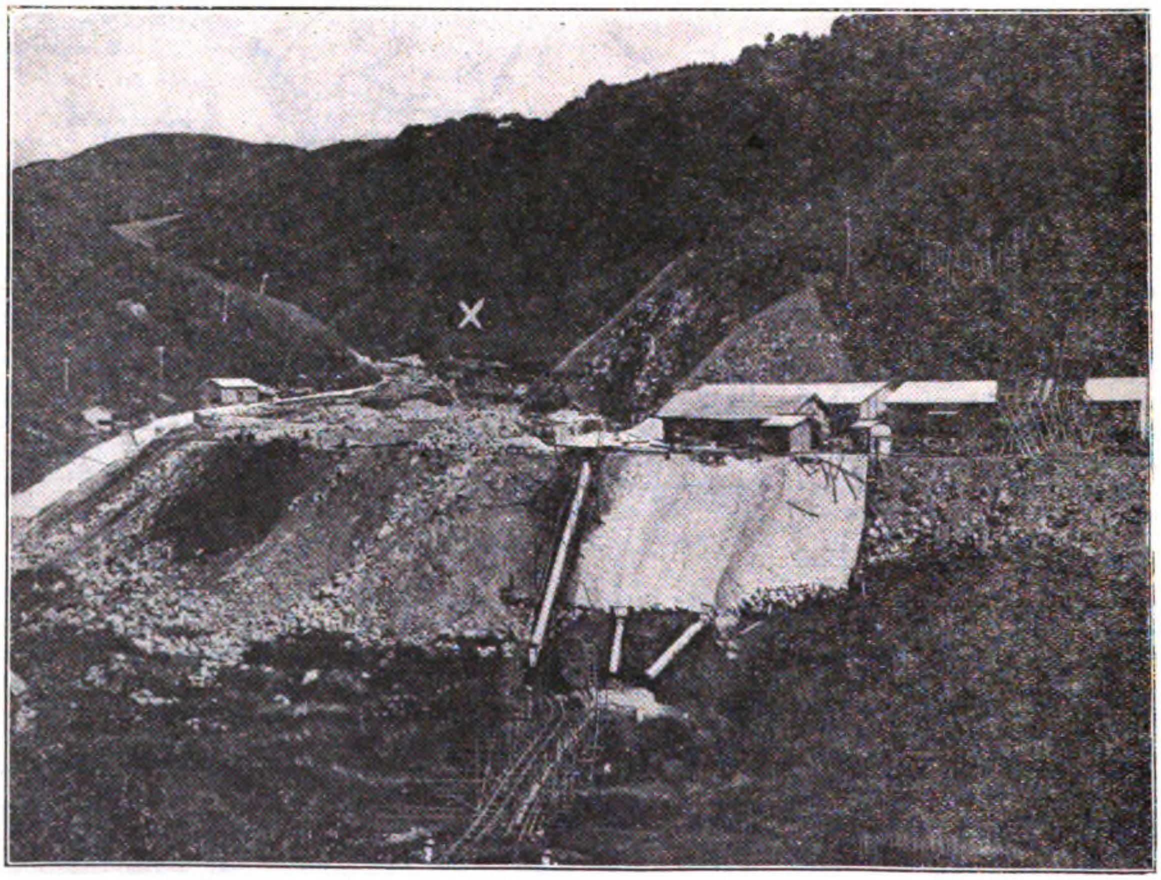
The projected line measures 30 miles 14 chains in length with the ruling gradient of 1 in 100 and the sharpest curve of 20 chain radius. It involves the boring of altogether 23 tunnels, and the building of 72 bridges and 8 stations and signal stations. Compared with the Kozu-Numazu section it is about 7 miles

shorter and has 1 in 100 ruling gradient as against 1 in 40, with the sharpest curve of the same radius. The highest point of the new line is in the Tanna Tunnel which is 255 ft. above the sea-level, while that of the Kozu-Numazu line is 1,500 ft. above the sea-level, that is at Gotemba. When reduced to equated length, the mileage of the lines is 39.2 m. and 74.2 m. respectively, showing a 35 m. or 50 per cent. reduction in the new deviation. As for traction, the new line will enable the locomotives to be 2.5 to 3 times as effective as on the old line, though of course this relative power varies according to the type of engines.

The line first traverses the valleys of two rivers, the Sakawa and the Hayakawa, especially where they are often liable to overflow. Then as that part of the neck of the Izu Peninsula which borders on the Sagami Bay abounds in rugged peaks and precipices overhanging the sea, the line has to skirt the foot of mountains, pierce hill-sides, and cross gorges. Naturally it often runs across or is parallel to the prefectural road and the tracks of the Dainppon Tramway Company. So the construction of this deviation involves a number of bridges, viaducts and tunnels. Besides it entails large amount of cutting and reclaiming and the construction of huge retaining walls. All these are expected to tax the skill of the Japanese engineers and it is not too much to say that this is the most difficult work that has ever been taken up in Japan.



South Portal of Komine Tunnel (855 ft.) near Odawara.



Southern Approaches to Tanna Tunnel under Construction. X Tunnel Entrance.

A Five-Mile Tunnel

The Tanna Tunnel measures about 5 miles in length. According to the plan it has double tracks, is 28 ft. wide and 22 ft 6 in. high above the formation line, with a cross-sectional area of 544 sq. ft. Besides, being the longest in Japan and one of the biggest double-track tunnels in the world, this bore presents very interesting features both from the engineering and geological point of view. The tunnel is to lie across a volcanic region, piercing part of the ranges that form the crater wall of the now extinct Atami volcano, and traversing the middle part of the Tanna basion which is supposed to be a maar. Work under such physical conditions has never been known in the world's history of tunnel engineering. It is therefore expected that numerous data of interest and value for geological and engineering studies will be obtained as to the earth's crust, ground temperature and water.

The headings were driven from the east and west portals, and they have now reached over 2,100 ft. at the former and over 2,400 ft. at the latter. The driving is carried on by means of air rock-drills. To operate them a compressor plant has been installed at each portal. For the purpose of removing excavations and conveying timber-

ing and lining materials, trains are run on 2 ft. 6 in. gauge tracks, hauled by electric locomotives. To supply electricity for use in the whole undertaking, a steam power plant is to be established at the west portal, where will be installed four 400 h.p. Takuma boilers and a 3,200 k.w. three-phase generators, 2,300 volt, 60 cycles, directly coupled to a Parson horizontal turbine. From this electric power will be transmitted to the substation which is to be erected both at the east and west portals. Pending the completion of the power plant, the air to be used for the rock-drills is supplied by the air-compressors worked by the steam-engine that has been temporarily installed at each portal.

The earth work and others on the Kozu-Hayakawa section, 5 m. 27 ch. in length, were commenced in December 1916 and were finished in January 1919. Plate-laying and girder building have made good progress on this section and the portion between Kozu and Odawara, measuring 3 m. 70 ch., will be opened to traffic in October this year. The next section Hayakawa-Enoura, 5 m. 16 ch. in length, was taken up for construction in August 1919, the earth and other works being now well forward. It was in April 1918 that the boring of the Tanna Tunnel, earth and other incidental works of the eastern and western approaches thereto were taken in hand, but its completion will take six years more, when the whole of this line will be opened as part of the Tokaido Main Line.

The details of the new deviation as compared with the existing line are as follow:—

Item	Unit	Existing Line	New Deviation
Length	m.	37.5	30.2
Highest point of track above sea-level	ft.	1,499	248
Aggregate height of track levels upward and downward	,,	3,018	721
Ruling gradient		1 40	1/100
Length of ruling gradient	m.	12.1	6.7
Aggregate inter-section angle of curves	deg.	2,061	1,431
Aggregate length of bridges	ft.	3,100	5,300
No. of tunnels		7	23
Aggregate length of tunnels	ft.	7,560	50,596
Equated length	m.	72.2	39.3

The 10-mile section between Otsu and Kyoto forms one of the natural bars to the traffic on the Tokaido Line on account of the heavy gradient on which the intercepting chains of hills are negotiated. The reconstruction now in progress is designed to reduce the maximum gradient of 1 in 40 to 1 in 100, by boring through the pass a tunnel 2,181 ft. long.

Relaying

The pioneer railway lines in Japan—the Tokyo-Yokohama and the Kobe-Kyoto section—were laid with 60lb. double-headed rails of English make, but on the lines subsequently laid 60lb. flat-bottomed rails of English make were used, while for the lines in the Island of Hokkaido 45lb. rails were adopted. Later on, 60lb. rails of the Pennsylvania type were introduced, replacing the double-headed rails on the main lines. The nationalization of the railways in 1906 and 1907 gave the Railway Management an opportunity to think out a plan of unifying the rails on the system, these being of divers types and dimensions and including 70 lb., 60 lb., 56 lb., 50 lb., and 45 lb.,—a cause of serious trouble in the maintenance work. It was also found necessary, in view of the increase in train loads and speed called for by the growth of traffic, to strengthen some trunk lines with heavier metals. The type of the American Association of Civil Engineers was adopted as a standard type, and it was decided to relay the main trunk lines with 75 lb. rails, such as the Tokaido and the San-yo main lines and certain heavy sections of the North Eastern Line, while the relaying with 60 lb. rails of the sections laid with the lighter rails has also been energetically carried out from year to year.

The following statement shows the kinds of rails used on the various lines on March 31, 1917:—

Line	75lb.	70lb.	60lb.	56lb.	50lb.	45lb.	Total
	m. c. l.	m. c. l.	m. c. l.	m. c. l.	m. c. l.	m. c. l.	m. c. l.
Tokaido ..	511 23 68	10 48 59	401 28 89	—	0 09 29	—	923 30 45
Hokuriku ..	5 13 55	—	229 56 01	—	34 38 00	—	269 27 56
Central	20 76 94	—	294 42 58	—	—	—	315 39 52
San-yo	4 37 15	106 39 61	369 55 96	—	3 22 39	—	483 75 11
San-in	25 43 63	—	258 56 28	—	13 53 72	—	297 73 63
Kansai	—	—	301 52 29	—	40 34 41	—	342 06 70
North Eastern	11 34 28	4 53 39	1,009 29 66	—	17 53 44	—	1,043 10 77
Gan-Etsu ..	—	—	108 14 11	—	—	—	108 14 11
O-U	24 10 34	—	363 29 82	—	4 04 47	—	391 44 63
Riku-U	—	—	28 07 42	—	—	—	28 07 42
Shin-Etsu ..	10 35 24	—	231 34 60	—	—	—	241 69 84
Sobu	—	—	135 33 86	—	53 70 70	—	189 24 56
Sanuki	—	—	37 41 29	—	7 46 61	7 61 68	52 69 58
Tokushima ..	—	—	—	—	46 13 40	—	46 12 40
Kagoshima ..	21 20 11	—	273 66 40	—	26 30 51	—	321 37 02
Nagasaki ..	—	131 68 02	—	—	13 56 35	—	145 44 37
Hoshu	—	—	142 56 65	2 65 11	17 78 69	—	163 40 45
Chikuho ..	—	—	97 77 84	—	8 72 10	—	106 69 94
Miyazaki ..	—	—	69 49 00	—	—	—	69 49 00
Sendai	—	—	31 08 71	—	—	—	31 03 71
Hakodate ..	—	—	337 10 60	—	5 49 81	9 25 69	352 06 10
Muroran ..	—	—	153 08 97	—	—	—	153 08 97
Rumoe	—	—	31 32 00	—	—	—	31 32 00
Kushiro	—	—	168 26 58	—	—	59 46 40	277 72 98
Soya	—	—	0 25 14	—	—	106 44 49	106 69 58
Abashiri ..	—	—	119 49 61	—	19 78 24	31 20 25	170 68 10
Total	634 54 92	121 61 59	5,325 77 29	2 65 11	313 62 84	214 38 51	6,613 29 55

The following statement shows the length of the lines strengthened by the relaying with 75lb., 70lb., and 60lb. rails.

Line	75lb.	70lb.	60lb.
	m. c. l.	m. c. l.	m. c. l.
Tokaido	423 79 60	11 71 77	13 17 51
Hokuriku	6 19 17	—	3 50 93
Central	18 71 54	—	2 28 92
San-yo	4 25 46	40 10 48	32 12 55
Kansai	—	—	45 76 00
North Eastern	9 24 88	—	10 46 80
Gan-Etsu	—	—	0 21 52
O-U	22 33 57	—	2 03 74
Shin-Etsu	10 37 45	—	3 27 49
Sobu	—	—	98 74 79
Sanuki	—	—	2 45 03
Kagoshima	14 20 31	—	67 43 97
Nagasaki	—	—	130 66 02
Hoshu	—	—	35 31 91
Chikuho	—	—	28 52 68
Hakodate	—	—	68 66 46
Muroran	—	—	15 74 07
Kushiro	—	—	112 47 96
Soya	—	—	0 20 00
Abashiri	—	—	26 37 05
Total	509 71 98	52 02 25	701 45 40

New Stations

The provision of new stations has been necessitated at various points on the existing lines, as a result of the development of local industries, and also where the lines connect with, or are crossed by, new extensions. On the other hand, the shortening of the block sections due to the increase in the train service required an increasing number of flag stations.

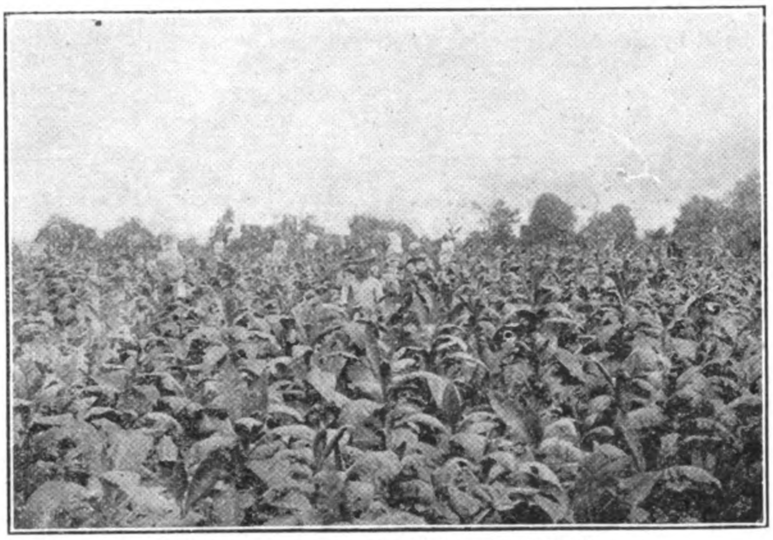
The following statement shows the new stations built during the ten years ending March 31, 1917:—

Year ending March 31	Stations	Flag Stations	Junctions	Total
1908	7	2	—	9
1909	27	2	—	28
1910	20	2	—	22
1911	21	8	2	31
1912	16	12	3	31
1913	14	13	1	28
1914	20	6	2	28
1915	11	3	0	14
1916	7	3	1	11
1917	12	6	—	18
Total	154	57	9	220

Philippine Tobacco Staking a Claim

By J. J. HERIER, of the "Times Press," Manila

THROUGH the tobacco industry more than through any other single agency, the Philippine Islands is being constantly thrust upon the attention of the people of the United States, and, in a growing measure on that of the world at large. In addition to providing the archipelago with one of its most important and consistently profitable sources of revenue, tobacco as an article of export also acts as a medium of publicity in keeping the term "Manila," with its associate idea "The Philippines," constantly and repeatedly in the consciousness of the outside trading public. "Manila" tobacco, "Manila" cigars—what other single product does in a similar manner distribute itself and the name associated with its origin before the eyes of so many thousands of consumers across the seas? Indeed, it is the peculiarity of this particular article to advertise the country of its origin, a peculiarity not possessed to the same extent by any other product. Thus we have "Egyptian" tobacco, "Cuban" tobacco, "Turkish" tobacco, etc., with their diversities in names of brands and varieties of forms through which they seek to attract the consumer.



Tobacco Field in the Philippine Islands

Through a partial acknowledgement of this truth, as well as because of a grave threat of a considerable loss to the government coffers in case of failure of American demand, Manila tobacco men, in co-operation with the Philippine government, are at present bending every effort in maintaining their hold upon the American markets, and, through process of legislative regulation and systematic advertising, to create an increased demand for Philippine tobacco in the United States. That this propaganda, already under way, will result in establishing the Manila cigar on the American markets with permanency, has already nearly been proven, judging from advance information. A prejudice of a decade against Manila tobaccos is fast vanishing. The war provided an unexpected *entré* into American markets, which was intelligently seized upon by the Philippine manufacturers. To-day, vigorous enterprise is being shown in improving this opportunity.

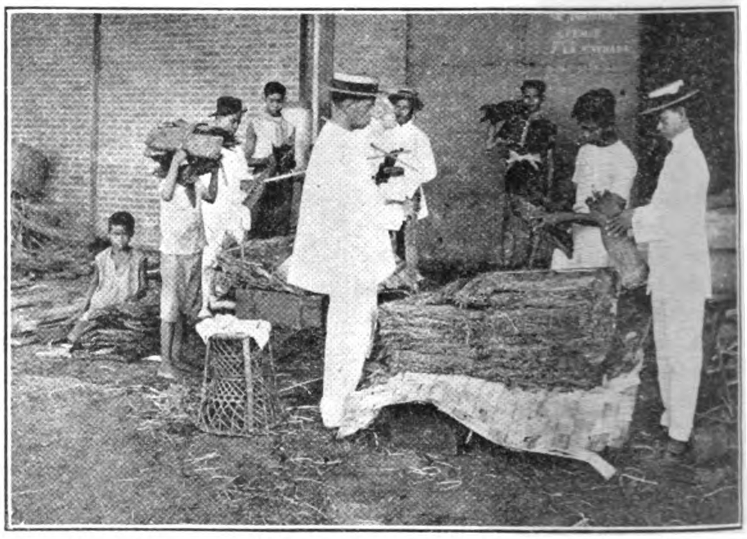
However, in the situation lurks a danger which if not met by direct action and overcome, may undo all advantages gained thus far. This danger admittedly lies in the agricultural phase of the Philippine tobacco industry, and it is to this that the government is giving careful attention. A complete and thorough examination of the situation by the bureau of agriculture and the bureau of internal revenue during the past three years resulted in an understanding of underlying causes which hitherto crippled output and injured promising opportunities. Legislation, based upon these revelations and recommendations for improvements, is now in full operation; and improvement of striking character goes on apace.

Appropriations have been made without stint, and unremitting labors of experts and tobacco exponents have been utilized in the endeavor to modernize the entire industry and to place it in a position to compete with Cuba, Sumatra, The United States and other centres of supply. The purpose of the movement is to make Philippine tobacco as individualistic as any other of the standard varieties on the world markets Given time, success in the undertaking is inevitable, say Manila merchants.

What are the agricultural difficulties, and what is the prejudice which the industry contends in its endeavor to win recognition in America?

Until recently, no organized attempt on a large scale had ever been made to create and supply a large, permanent demand for the article. The trade was in the hands of small buyers and jobbers, who purchased from the native or Chinese growers in terms most profitable to themselves, and who sold in turn to larger exporters.

The native planter was given no stimulus and no encouragement to adopt new methods of culture or to attempt improvements in quantity or quality through scientific innovations. Hidebound custom and age-old ignorance governed tillage methods and curing processes. The Cagayan valley, which is by far the foremost tobacco-producing region of the islands, is decidedly backward, notwithstanding its marvelous natural advantages. Most antiquated methods of culture prevail. This in part is a natural result of its geographical isolation. In addition, so small has been the income of the planter, that he can provide the bare necessities of life only with difficulties. He struggles from season to season with a scant subsistence level. That in the past the tobacco industry has been neglected and sadly ignored by the insular government, is demonstrated by figures presented by J. J. Rafferty, former director of the bureau of internal revenue, showing that the greater portion of P.6,000,000 annually collected by the government as revenues from the tobacco industry is derived from the Cagayan valley alone.

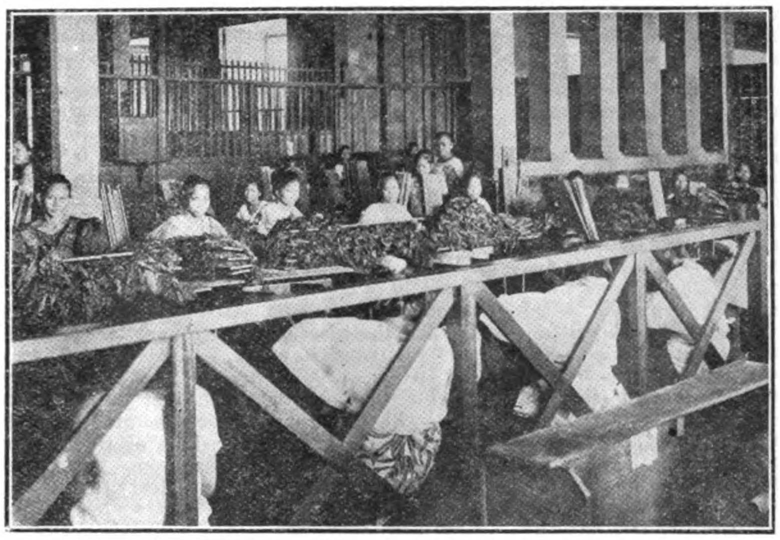


Dealers selecting Tobacco Leaves at "Compania General de Tabaccos de Filipinas", Manila, P.I.

He shows further that public works have been neglected; schools are inadequate; health measures are in urgent need; means of communication between the valley and other points are meagre, and within the valley during a larger part of the year, next to impossible, and mail service primitive and unreliable. Thousands of hectares of fertile land still lie idle, isolated through lack of roads, despite overpopulation in sur-

rounding districts. Unhygenic living, insanitary surroundings, pestilence and ignorance through lack of educational institutions do much to retard effort on the part of the natives and to render their labor ineffectual.

In other important tobacco regions of the world the question of pure strains in tobacco culture, together with uniformity of plant and leaf are considered of the highest importance commercially. All possible care is taken to secure and perpetuate purity of strain. No attention is given this matter by the Cagayan valley farmer. The idea has obviously never occurred to him nor are better and more profitable methods of culture and seeding known to him.



Women separating the Veins of Tobacco at the "La Insular" Cigar Factory, Manila, P.I.

Losses of 60 and 70 per cent. of the season's crop through insect parasites, rains, and improper provisions in the care of seed are common events in the life of the Cagayan valley farmer. It may be said that as yet the entire tobacco culture of this most productive region is in the unskilled and undirected hands of small farmers. Unlike the situation commonly found in Cuba, Borneo, Sumatra, and other great tobacco regions, where plantations are large and all phases of operation and maintenance controlled by one or a few persons, the tobacco is grown almost entirely by small individual planters, who must bear all the losses from ravages of insect pests, unfavorable seasons, storms and those things incident to inadequate curing facilities, to say nothing of usurious rates of interest and unscrupulous tactics of tobacco buyers at whose mercy they too often find themselves.

Plainly, then, unless all publicity and propaganda work to establish Philippine tobacco in the American market is to go for nought the government and the tobacco interests must take the bull by the horns, and by intelligent and co-operative effort and ungrudging expenditure lay under the industry an agricultural foundation which will insure a plentiful and permanent supply of good Philippine tobacco to fill the demand which is being created. This situation is fully appreciated and no stone is being left unturned in the endeavor to bring it to a successful issue.

Warehouses are being established to enable the planters to secure loans on his harvested stocks, thus obviating the necessity of disposing of his current crop each season at low prices; credits have been extended; free timber grants established, which will improve handling and curing facilities; selected seed is being distributed gratutiously through government agencies, and finally an extensive educational campaign is being carried on by the bureau of agriculture and the bureau of education to back improved methods and to educate the younger generation more fully.

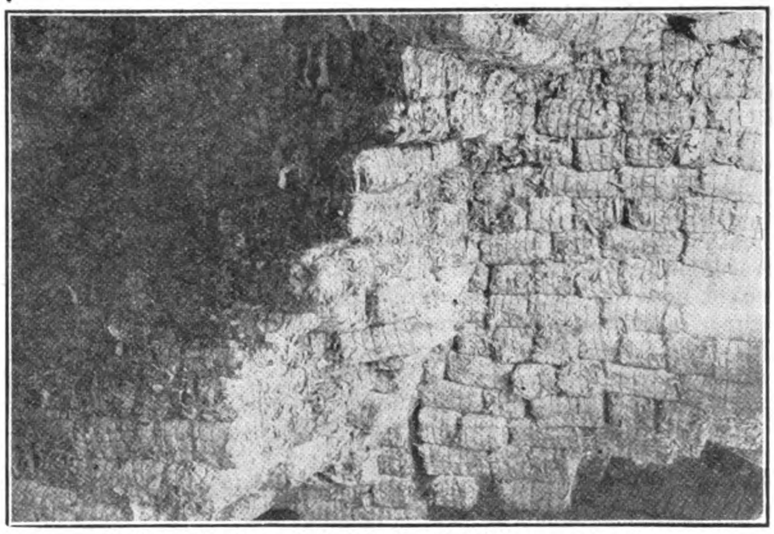
Manila cigars have in the past, suffered a not entirely unjustified discredit which has now been removed. Shady practices of Philippine exporters, dating as far back as 1910, have caused suspicion and mistrust with American buyers, and no organized move was made to overcome it until a few years ago. Export trade was left to take care of itself, and, until 1916, there had been no growth therein. In fact at times a distinct falling off was disclosed.

The Manila manufacturer was frankly unbusiness-like, careless, and at times undeniably dishonest. Correspondence was handled in a slipshod and negligent manner, coupled with a general disinclination to extend the customary credits. Goods arrived in the United States in damaged condition; sizes, shapes and colors were not suited to the market and were out of accord with the buyers' specifications. Manufacturers declined to take back or replace damaged goods, and consequently undesirable cigars were thrown on the market at auction, discrediting the goods in the eyes of both dealer and consumer.

Finally, the quality of the Manila cigar was permitted to be lowered to such an extent that it was considered unsmokable and worthless. In 1916 the Philippine legislature enacted a measure known as the tobacco inspection law, in order to promote the tobacco industry; several features aimed directly at the bad practices on the part of the manufacturers.

The law, among other things, provided for improvement of leaf quality; for inspection of leaf tobacco and of manufactured products, and prohibited the exportation thereof to the United States unless they complied with certain fixed standards. It also provided for the appointment of tobacco agents in the United States to represent the island product generally, and for the payment by the government for the expenses incurred for reconditioning cigars which after inspection reached the United States in damaged condition.

This law represented a far-sighted policy in seizing the opportunity presented by the war. Necessity of growing food stuffs and lack of labor had diminished the tobacco output in the United States while the island conditions remained substantially unchanged. When American tobacco dealers called upon the Philippines to supply their diminishing markets the island exporter determined not only to answer that call but also to utilize it as an opportunity to rehabilitate his lost reputation and create a faith that would carry on through, the post-bellum



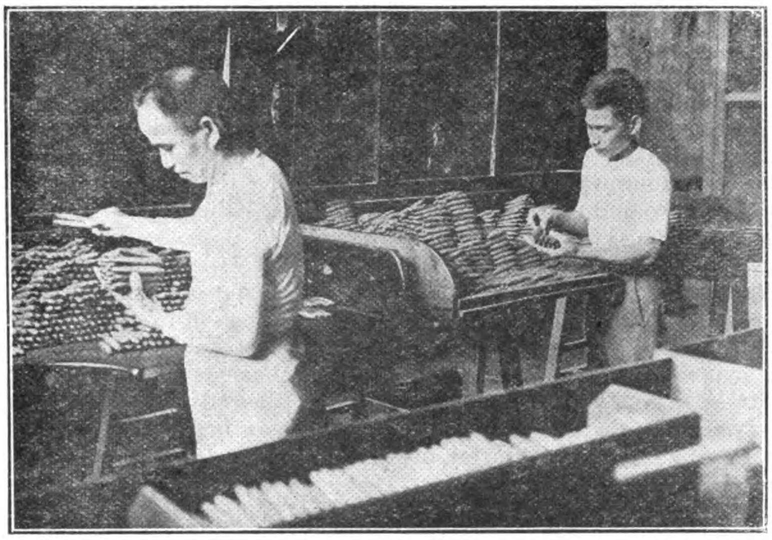
Tobacco Bodaga of the "La Insular" Factory. showing Tobacco Leaves in Bales

years. This he has done. The year 1919 witnessed the exportation of 392,300,000 cigars; in 1918 360,000,000 cigars were exported from the islands; 176,000,000 in 1917 and 114,000,000 in 1916.

A long period of unbroken and unprecedented rains inundated and destroyed large areas of the 1919 crop. Following this a drought took heavy toll from the already damaged plantations. However, as cigars are manufactured from the leaf of previous crops the reduced crop of 1919 will have small influence on the immediate cigar business. During the first six months of 1919 cigar exports increased in value by P.3,000,000 over the amount for the same period of 1918, with the June figure 75 per cent. greater than that of any preceding month.

It is expected that a serious curtailment of these figures will occur this year, however; and insofar as the future for Manila cigars in American markets rests on popular priced goods,

together with an estimated damage of 50 per cent. to the 1919 crops by storm and drought, and the rigid protective standards which are being enforced, the outlook for the present year is considered rather doubtful. Furthermore, Manila manufacturers believe that the increase in exportation of Manila cigars to the United States during 1917-1918 was due almost entirely to war conditions, and not to results from the newly undertaken publicity campaign. It is estimated that 3 per cent. of the cigars now used in the United States are Manilas.



Selecting and Sorting in the "Insular" Factory, Manila

The export of tobacco leaf from the Islands is to be discouraged rather than encouraged, as in view of the large supply and comparative cheapness of labor, it it considered better for the economic condition of the home country to increase manufacture of tobacco products, and keep at home money spent on all attendant operations. Moreover, leaf export to the United States is now reduced to insignificant proportions; and it is not likely, in view of the large crops there and the return of cheaper grades to the market that this trade will revive of its own accord in the near future.

However, reviving markets in Spain and England are calling for the local product, and local factories are supplying the demand. Exports of leaf tobacco in January were valued at P.3,019,847, which, compared with the figures of the previous month, which were P.1,667,446, shows a decided increase in the consumption of Philippine leaf in foreign countries. This is looked upon by the tobacco prophets of the Islands as the forerunner of a great future prosperity in the home manufacture of cigars and cigarettes. Both cultivation and manufacture of tobacco require large amounts of hand labor. This the Islands have in abundance. Encourage the home industry, is the cry.

Growth of Flour Milling in Hankow

Wheat has become one of the principal crops of Central China, writes Consul-General Edwin S. Cunningham, while at Hankow, and a recent investigation discloses the fact that it is grown in practically every section of the consular district. There are already flour mills in Hankow which are reasonably prosperous, and others are under contemplation. The production of wheat has increased marvelously during recent years, and it was a matter of considerable surprise that greater efforts were not made by the Allied Governments to induce the Chinese farmers to adopt modern methods, which would have trebled the production of wheat at the time when foodstuffs were extremely desirable. Wheat is one of the principal articles of export from Hankow, the volume of the trade having increased from 59,373 bushels in 1914 to 5,214,087 bushels in 1918. This development of wheat growing opens a large opportunity for the growth of the flour-milling industry, and with it for the sale of flour-milling machinery. It is worth while for American manufacturers of milling machinery and supplies to keep in touch with the situation here through engineering firms which import such machinery from foreign countries.—**U. S. Consular Reports.**

Modern Tannery in Hongkong

In 1917 a modern tannery was constructed by Chinese interests in Hongkong, says U. S. Consul-General George E. Anderson, the plant being located on the mainland portion of the colony on the site of a smaller native tannery which had been in operation for many years and which furnished, in fact, the financial and commercial foundation for the new undertaking. The actual operation of the new tannery was undertaken in January, 1918; but a short trial demonstrated that it was not a practical success, although the new plant was equipped with modern machinery of all sorts, including a considerable outfit from the United States, and had been constructed under the direction of a foreign trained Chinese chemist and leather expert. The plant became idle, and was acquired by a British concern which reorganized it, enlisted an American leather expert and sent him to the United States to purchase additional modern equipment. Now under this British reorganization, including American financial interests, the plant has commenced the actual tanning of leather.

Already considerable quantities of sole leather have been produced, and with the beginning of 1920 the tannery commenced the production of chrome leather of practically all ordinary grades. The entire business is under British and American financial and technical control. It is producing a comparatively high grade of sole leather and a very fair grade of chrome calf and similar leathers at prices which cannot be met by the somewhat higher-grade but much more expensive leathers imported from the United States and Great Britain. Just how far this factory's output will affect the trade in imported leathers is problematical. but on the whole it is believed that it will not have any very unfavorable result. The quality of leather it is now producing suits the native trade to a very fair extent, and will doubtless take the place of the cheaper grades of upper leather imported from the United States. It is likely, however, that with this cheaper supply of leather available there will be an increase in the use of foreign-style leather shoes, with the result that demand for American and European leathers will centre on the better grades, and there will be little clashing of interest between the two lines of trade. In sole leather there will be practically no competition from American leathers; for almost no sole leather is coming into this field from the United States or Europe at the present time.

Imports of sole leather into Hongkong in 1919 were valued at $6,000,000 (approximate). Of these imports the larger portion comes from Singapore, with Indo-China, Burma, and Siam furnishing nearly the whole of the balance. A little high-grade sole leather comes from Australia, and a still smaller amount from the United States. The value of the imports of upper leather in 1919 was substantially $300,000, of which the United States furnished about 90 per cent., a little coming from Australia, India, and Indo-China.—U. S. Commerce Reports.

Motor-Vehicles in Siam

According to data published by the Bangkok customs, the number of motor cars landed at Siam during the last 10 fiscal years ended March 31, 1919, was 1,219 cars. Of this number 122 vehicles were imported from the United States during the first five years and 495 during the second five years. The number of licenses issued now exceeds 1,200, but the actual number of automobiles in daily use may not exceed 800. Most of these cars are for private use; comparatively few trucks or other commercial vehicles are employed, owing to the cheaper cost of transportation by water.

During the last five fiscal years American motor cars have practically dominated the Siamese market despite that, owing to lack of direct shipping facilities between Siam and the United States, their import was greatly hampered during the war by certain transhipment regulations at the ports of Singapore and Hongkong. In the fiscal year ended March 31, 1916, a total of 89 motor cars were landed at Bangkok, 70 of which were from the United States, 17 from the United Kingdom, 1 from Italy, and 1 from Singapore; in 1917 the total was 160 cars, 137 coming from the United States, 18 from the United Kingdom, 3 from Italy, and 2 from Singapore; in 1918, a total of 120 cars were imported, 102 from the United States, 14 from the United Kingdom, 1 from Italy, and 3 from Singapore; and finally, in the fiscal year ended March 31, 1919, the United States supplied 161 cars out of total import of 170 cars, 4 being supplied by the United Kingdom, 1 from Singapore, 1 from the Dutch Indies, and 3 from Hongkong. The aggregate declared import values during the respective periods were: 226,727 ticals in 1916, 519,845 ticals in 1917, 328,264 ticals in 1918, and 507,599 ticals in 1919. (Tical, at normal exchange, equals $0.3709 United States currency.)

The motor-cycle trade in Siam has not shown much progress during the last six fiscal years ended March 31, 1919; official import figures are not available for earlier years. The total number of motor-cycles imported for the six years was 277, of which 46 machines came from the United States, 184 from the United Kingdom, and 47 from all other countries. The number and declared value of the motor-cycles imported during each of the six years was as follows: In 1913-14, 57 machines, valued at 26,055 ticals; 25, value 12,504 ticals, in 1914-15; 37, value 20,893 ticals, in 1915-16; 41, value 21,364 ticals, in 1916-17; 92, value 52,334 ticals, in 1917-18; and 25, value 25,299 ticals, in 1918-19. Motor vehicles are not manufactured in Siam. As in former years the import duty remains 3 per cent. *ad. valorem.*

Wireless in Foreign Trade

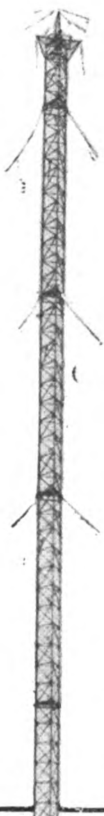
BUSINESS men everywhere appreciate how sweeping the reversals have been in the pre-war status of domestic and foreign commerce. It is not yet fully realized, however, that perhaps the most significant of the striking changes is the new position which the United States has achieved in the field of overseas communication. A few years back America's standing was an inconspicuous one; now, through the development of a system of trans-oceanic wireless stations, this country has taken over the leadership in providing facilities for telegraphic connection with the principal world markets. It is no exaggeration to state that the recent expansion of wireless communication has ushered in a new commercial era.

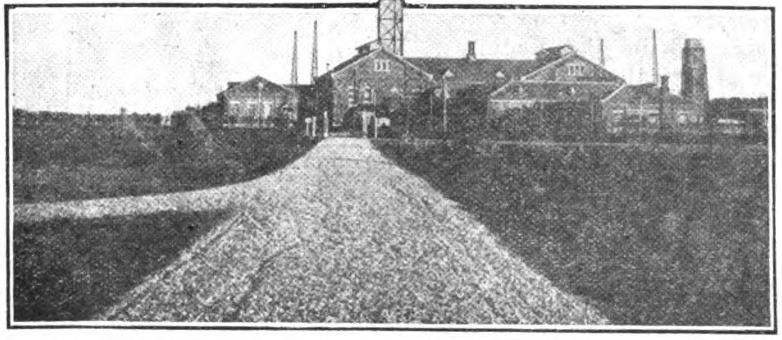
When the globe-girdling chain of wireless stations was first conceived, industrial America was inclined to view the introduction of long-distance radio circuits as something of scientific interest; now the leaders in commerce are learning that world-wide wireless has arrived in time to help the nation's business out of a serious dilemma.

Just how vital is this new relation of wireless to trade has been made clear for readers of the FAR EASTERN REVIEW in a special interview with Edward J. Nally, president of the Radio Corporation of America. He noted that an entirely new set of commercial conditions for Americans have grown up out of the enormously expanded foreign trade which was forced upon the United States during the war. "Throughout the country," he observed, "there has been a great awakening. Eyes and thoughts are being cast overseas that never before extended beyond home boundaries. It is thoroughly realized now that it is only a question of time when American labor will be unemployed if the output of the greatly expanded industries is limited to home consumption. With ever increasing momentum a public sentiment is being created to demand foreign trade methods and facilities. Foremost is the crying need for an extension of facilities in the matter of quick communication between nations.

"Until world-wide wireless became an accomplished fact, American trade overseas was grievously injured and handicapped by the message delays which occurred with a cable system that had not been sufficiently improved and extended so that messages could be delivered and replied to promptly.

"The exporter needs the cable to keep him informed about his prospects. Foreign trade conditions are different from those of domestic trade. A modern exporter has to adjust himself quickly to ever-changing conditions. He has had to think by the cable; now he has a new channel of thought in the wireless."





The trans-Oceanic Wireless Station of the Imperial Japanese Government located at Funabashi and communicating with the Stations of the Radio Corporation of America in Hawaii and California

Mr. Nally is a pioneer in telegraphic communication. From its earliest days he has played a conspicuous part in building up the land wire network, noting and keep a step ahead of its cumulative importance to commerce within the United States. His mind, however, is not on the past; he is visualizing the present and visioning the future. Development of domestic trade was the sole concern of Americans up to a few years ago; its stimulation was the task of the land wires. Now that foreign trade is a necessity to maintain the nation's augmented business capacity, wireless communication to foreign shores enters as the vitalizing factor.

"Differences of time and distance call for a very different set of trading conditions," observed Mr. Nally. "When a selling transaction is negotiated with a foreign customer it is invariably specified that the goods are to be delivered on a certain date, at an agreed upon price, and are to be paid for in a definite manner. When a mishap occurs and these carefully pre-arranged plans are set at naught, the American shipper cannot take refuge behind the explanation that the details of the bargain were upset by conditions beyond his prevision or control. The foreign customer sees only that important details of the transaction have been changed, subjecting him to a revision of the original intention. It is only natural for the customer under these conditions to impose innumerable and sometimes unreasonable objections to carrying through the transaction. In fact, it may be stated as a general condition that the seller is usually held accountable and is expected to be infallible.

"It is perfectly evident, therefore, that quick telegraphic communication is one of the essentials of foreign trade. There is perhaps no better way to illustrate this than consideration of a transaction in seasonable commodities. Something goes wrong and it is necessary for the two parties to the transaction to agree upon a modification of the original terms. Should the American exporter attempt to take these questions up in correspondence by mail he must allow twenty days for a letter mailed in San Francisco to reach Yokohama, twenty-five days to reach Shanghai and thirty-four days to Manila. The foreign customer must then digest the new proposal, compose his reply and await delivery of his letter over an equal period. It needs no argument to show that foreign trade in a competitive field becomes hopeless without quick means of communication.

"The new world-wide wireless telegraphic facilities have been urgently needed for some time," Mr. Nally explained. "Cable delays have been one of the greatest hindrances to American industry in getting back to normal conditions, and in many instances have entirely stopped the functioning of the great foreign trade machine which the United States has set in motion. It will be vividly recalled by those who have attempted to use the cable between San Francisco and the Orient, that delays of nine days were sometimes experienced. Messages accumulated and piled up on the desks of the operators. When one seeks the reason why America and American merchants are waking up to the need for a combination of interests to the end of conserving their trade, the total inadequacy of cable facilities is found to be a controlling factor."

Mr. Nally instanced the recent merger by which the stations and patents of the Marconi Wireless Telegraph Company of America and the radio rights of the General Electric Company were acquired by the Radio Corporation of America, as the most practical step yet taken to develop and extend communication to adequate proportions. The new company began business on March 1 with the most powerful and costly commercial system in the world.

Long-distance stations which had been erected before the war were put into immediate operation and established for the first time direct commercial radio communication between the United States and England. Since that date the Radio Corporation of America, now free from the governmental control exercised during the war period, has been able to go ahead with its comprehensive plan of linking up the principal trade centres of the world. Its immediate facilities are comprised in nine powerful stations in United States territory; another is now under construction in Argentina and, later, the system will be extended to Brazil, Uruguay, Paraguay, Chile, Peru, Ecuador,

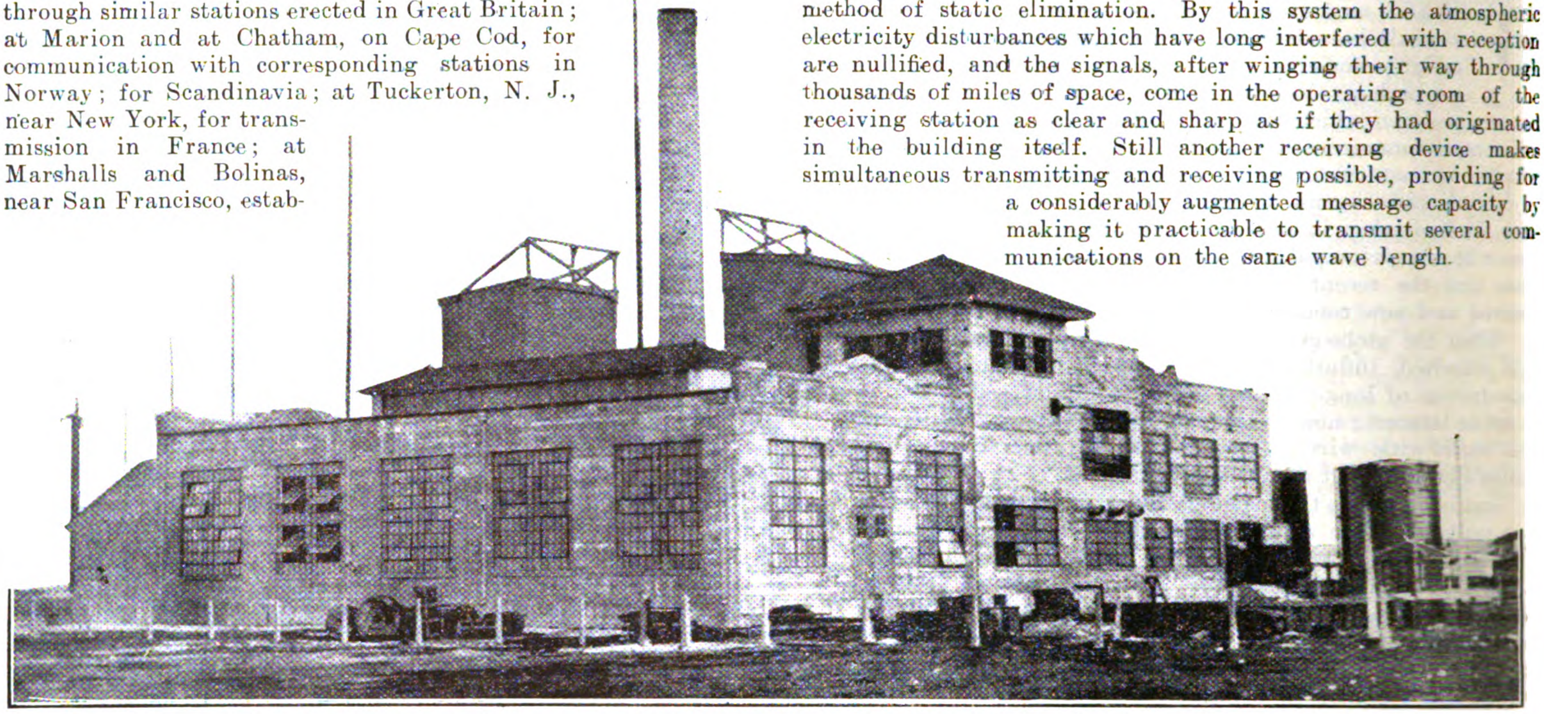
Columbia, Bolivia, Venezuela, Mexico and the Central American republics.

The completed trans-oceanic stations are located at New Brunswick and Belmar, New Jersey, connecting up New York with London through similar stations erected in Great Britain; at Marion and at Chatham, on Cape Cod, for communication with corresponding stations in Norway; for Scandinavia; at Tuckerton, N. J., near New York, for transmission in France; at Marshalls and Bolinas, near San Francisco, establishing communication with Hawaii through stations at Kahuku and Koko Head, and thence to Japan and the Orient.

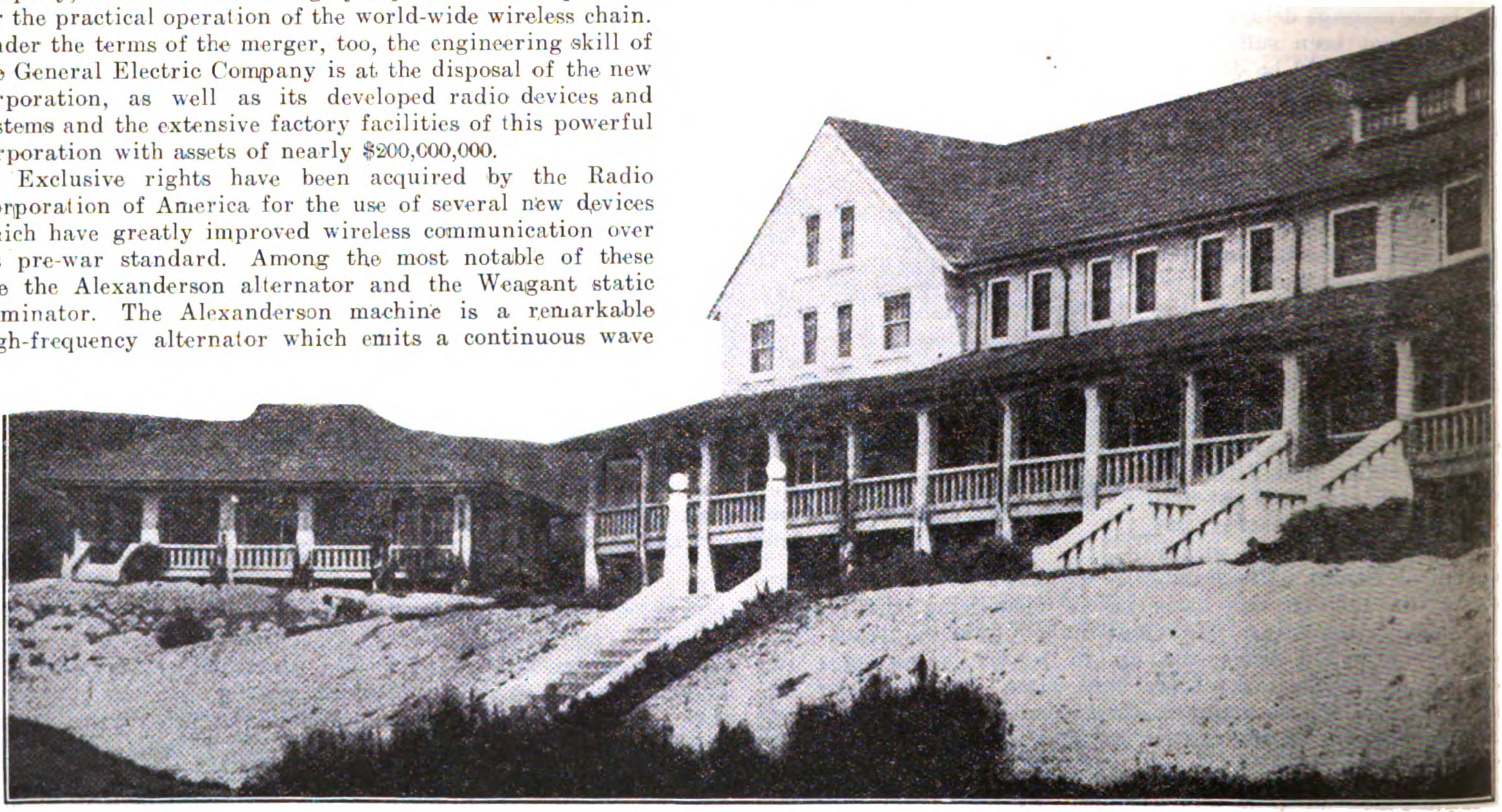
The new Radio Corporation of America is in a very strong financial position, and in addition to Mr. Nally, who as vice-president and general manager of the Marconi Wireless Telegraph Company of America, developed the present trans-oceanic system, has taken over the entire official and technical staff of the latter company, men who are thoroughly experienced and qualified for the practical operation of the world-wide wireless chain. Under the terms of the merger, too, the engineering skill of the General Electric Company is at the disposal of the new corporation, as well as its developed radio devices and systems and the extensive factory facilities of this powerful corporation with assets of nearly $200,000,000.

Exclusive rights have been acquired by the Radio Corporation of America for the use of several new devices which have greatly improved wireless communication over its pre-war standard. Among the most notable of these are the Alexanderson alternator and the Weagant static eliminator. The Alexanderson machine is a remarkable high-frequency alternator which emits a continuous wave of radio oscillations upon which the signals of the message are imposed, providing a telegraphic method of great superiority over the earlier use of an interrupted spark train for transmitting the communications. Of equal importance in perfecting the reception of wireless messages is the recently developed Weagant method of static elimination. By this system the atmospheric electricity disturbances which have long interfered with reception are nullified, and the signals, after winging their way through thousands of miles of space, come in the operating room of the receiving station as clear and sharp as if they had originated in the building itself. Still another receiving device makes simultaneous transmitting and receiving possible, providing for a considerably augmented message capacity by making it practicable to transmit several communications on the same wave length.

With these improvements in use the capacity of the trans-oceanic wireless stations can be constantly expanded to keep pace with any message demands, and delays and congestion such as have been experienced with the cables will become a thing of the past. Wireless is more than a hope; it is the answer to the problem of speeding up the transactions of America's international commerce.



Power House of the trans-Oceanic Wireless Station at Kahuku, Hawaii, Transmitting Messages Simultaneously to the California Stations of the Radio Corporation of America and the High Power Station at Funabashi, Japan



The trans-Oceanic Wireless Station of the Radio Corporation of America at Marshall, California, communicating with that Company's High Power Stations in Hawaii

This greatly improved service, too, has introduced lower rates, effecting direct savings in the conduct of business and enabling a more general and widespread use of telegraphic facilities for industrial transactions.

The factors of speed, increased reliability, accuracy, and lowered cost, however, have an economic importance far greater than is represented solely in the promotion of trade, according to Mr. Nally's viewpoint. World-wide wireless, as he conceives it, has opened the way to a new era in co-ordinating the interests of a reconstructed world, preparing a great channel for dissemination of national views and view-points and the cementing of closer relationships of the peoples of all civilized nations.

"The universality of wireless makes this practicable where it has never been possible before," explained the president of the Radio Corporation. "Desert, mountains, water and isolated communities are all accessible to the radio message; there is no place on the globe so remote that wireless cannot reach it. When our whole plan is fulfilled any character of service or any class of message will be available as it is called for.

"It does not take mature reflection to appreciate the importance of a low-priced telegraphic news service. Its influence on world progress is obvious at a glance. Take, for example, the special facilities of our trans-Pacific service. We all recognize that the Orient and the Occident are worlds apart. Yet the day has arrived when we must reach a closer understanding with these nations overseas, if only for the reason that America's sales to the Far East have increased four-fold and we are buying double that quantity in return. These new connections which have been established have only to be cultivated to be made permanent. Such cultivation obviously calls for more than ordinary business integrity and observance of the commercial equities; the problem reaches down into the soul of nations. The adage that human nature is the same the world over is not entirely applicable to the Orient; mental processes begin at a different point with the two races, they follow a different route and often reach a different conclusion. Reconciliation of the divergent views can only be brought about by a sympathetic understanding between Americans and Orientals. It is in the interpretation of the psychology of these nationals that wireless is destined to weild a powerful influence.

"The change will be brought about by many influences, but I would rate as of greatest importance the broader scope given to the newspaper press. We can appreciate how American affairs and American sentiments have been distorted in the minds of Orientals; it is equally clear that we have but a very sketchy idea of what they are thinking and doing. This is because the news received from both continents is usually of a sensational order. The high cost of cable transmission places very definite limitations on the number of words a newspaper correspondent can send. Both sides of the story cannot be told; the conservative, and usually representative, thought of America must therefore be subordinated to the mere outline of the sensational act or occurrence which is the basis of the news item. With lower rates, lack of congestion, increased speed and reliability of transmission, world-wide wireless opens up a great channel for better understandings and a wider tolerance in matters which affect world destinities.

"The same principle obviously applies as well to straight commercial telegraphic correspondence," Mr. Nally concluded, "and to those who view the new communication facilities in this light, the fact that the system of the Radio Corporation of America has been thrown open to public service is nothing short of an epoch-making event."

Japanese Labor Century Behind

Drawing a parallel between the conditions in Japan at the present day and those in Britain at the beginning of the nineteenth century, Mr. Oswald White, Vice-Consul at Osaka, in a report on Japanese labor, says that in both cases the factory system was taking the place of the domestic system, and the attendant evils which are now coming into prominence in Japan are similar to those experienced in Britain a century ago. In the course of his report Mr. White says that Japanese labor is usually summed up as being cheap in price and poor in quality, and as a rough generalization this judgment may be accepted. The average Japanese workman, though short in stature compared with a European, is strong and well developed, and capable of working long hours at a stretch, though it is said he falls short of the European in the case of work requiring great physical strength and stamina. One of his merits has been described as obedience and his demerits apathy, the latter being probably largely the result of economic conditions. The long hours of the Japanese workman are discounted by the inability to concentrate. A prominent quality is the quickness to learn, but there is an absence of originality. The Japanese has been spoken of as matter of fact rather than practical. The standard of intelligence shown by the average workman is admittedly low. It could hardly be otherwise under present conditions.

Progress in connection with the factory system has been especially rapid in the last five years, and Japan is rapidly acquiring an important position among manufacturing countries. The supply of labor is plentiful, but skilled labor is scarce. A feature of Japanese industry is the quantity of female and child labor. The spinning and weaving companies employ 100,000 girls of whom a considerable number are children, as against a quarter that number of men. Similarly in weaving, all kinds, the number of women working in 1912 was stated to be 133,000 in factories and 205,000 in cottages, while the number of men was given as 15,000 and 11,000 respectively.

The Japanese workman works long hours—10 to 12 on an average—with few holidays. Casual labor is obtained from the so-called human market. In Osaka irregular workmen gather every day, and contractors come and collect as many men as are wanted for particular jobs The pay reserved in the various industries has increased steadily year by year, and during the war it nearly doubled. Unfortunately prices have risen too, and there is little doubt that in Japan prices have risen first and wages after. Many causes conspire to keep down wages. Labor is plentiful and inefficient. These two reasons prevent labor from getting more than a bare living wage. It is at this point that the competition of female and child labor and of the cottage industries is felt.

Trade unions are at the present moment non-existent, and under the present law would have little power if formed. They are not illegal, but there exists a clause in the law of public security making it illegal to instigate a strike. Liberally interpreted this does not hinder workmen from striking, and, in fact, they do strike but it hampers organized action. Moreover there is a well-grounded suspicion that the authorities have hitherto passively obstructed the formation of trade unions.

In his conclusions Mr. White says that the conditions are so complex that changes must come slowly. Nor would it be safe to conclude from the parallel drawn that they would closely follow the trend of events in Britain in the last century. The Japanese character is different from the British, and what is one man's meat is another man's poison.

Shipping Situation in Japan

Comments in the "Japan Chronicle" on the shipping situation seem to indicate a general depression, especially in the North American trade. This is evidenced by a reduction of from 10 to 30 per cent. in the freight rates of unsubsidized steamers, and the disengagement of their respective charters by 57 ships, during March and April. The forthcoming activity of the Osaka Shosen Kaisha, which has several large steamers under construction for use on its Tacoma-Hongkong-Manila run, is reported as being watched with interest by Japanese shipping men, in view of the pessimistic forebodings due to the growing amount of idle cargo space. On the other hand the "Japan Advertiser" and the "Japan Gazette" do not seem to think that the supply of tonnage space will exceed the demand, during the next few years, at least. In the latter paper an official of the Nippon Yusen Kaisha is quoted as saying that this company must increase its fleet to participate in the activities anticipated in oriental waters, and has decided to build 60 freighters and 7 passenger boats within the net five years. That company has decided, according to the "Japan Advertiser," to replace the branch line that has connected Japan with the South Sea Islands, with two monthly services, both starting from Yokohama, one going to the eastern and one to the western part of the South Sea Islands, formerly belonging to Germany, and occupied during the World War by the Japanese Navy. Another development in trans-Pacific service is the inauguration by the Mitsui Bussan Kaisha of a run between Dairen, Japan, and Seattle, to supersede the present irregular service. Until May the company will send a vessel every two months, after which time a regular monthly service will be maintained.

Road and River Improvement in Shantung Province

Civil Governor Sets Out a Notable and Ambitious Program

IN a recent issue the FAR EASTERN REVIEW announced the development of an ambitious program of road and river improvement work for Shantung Province, China. Details have since been issued and we take the following from the "China Press," of Shanghai:

One of the most far reaching as well as the most daring programs ever presented to any province in China is Civil Governor C'hu Ying-kuang's plan of building 4 000 *li* of automobile roads and of deepening the Hsiao Ch'ing River.

Mr. T'ang En-liang, a graduate of Purdue University in Civil Engineering and at present on the staff of Shantung Christian University, has been appointed to take charge of the Bureau of Roads and Waterways. At present Mr. Tang has two parties of ten men each surveying roads in and around the city of Tsinan.

If this scheme is actually carried out in its entirety, it will bring about an economic transformation of Shantung. First of all, it will weave all the important cities of the province in a unified transportation net. Under existing conditions many of the important cities, as for example Chefoo, are hamstrung economically, because they lack adequate land transportation facilities.

But far more important than connecting the chief cities is the fact that such motor truck roads and the deepening of the Hsiao Ch'ing River would break the backbone of Japan's economic domination in Shantung. At present Japan has a monoply of the existing railway facilities in the eastern half of the province. Even if the Chinese themselves should build the proposed Chefoo-Weihsien railway, both the railroad and Chefoo would still be at the mercy of the Japanese. Governor Ch'u's proposed scheme of automobile roads touches the sea at three different points, Lung K'ou, Chefoo and Hai Yang, and connects with the Tientsin and Pukow railroad at a point not yet definitely determined. With these motor truck roads in operation even a novice will see that Japan can no longer hold an economic dagger at the throat of the Chinese merchants, manufacturers and mine owners in the eastern part of the province.

To Deepen River

Even more important, perhaps, than the building of the roads is the deepening of the Hsiao Ch'ing River. With characteristic keenness Governor Ch'u says "Since the building of the Chiao-Chi railroad these districts are dependent upon this river for transportation in competition with the railroad. Therefore, the improvement of this river so as to make steam navigation possible must not be delayed." In the November, 1914. issue of the FAR EASTERN REVIEW Bronson Rea first advocated this plan as a means of checking Japanese aggression in the province of Shantung. The Governor has adopted Mr. Rea's suggestion.

The appended map and a translation of the Governor's plan bring out the salient points of the proposed program.

1. The lines of communications of the whole province should be so improved that the railroads, waterways, commercial ports, sea-ports, all the districts producing important commercial products, and all the places of military and naval importance may be connected by roads fit for heavy motor trucks. A necessary preliminary step is investigating the conditions to determine which shall be trunk lines and which shall be branch roads.

Railroad Plans

2. The Chiao-Chi (Shantung Railroad) and Tsinpu (Tientsin-Pukow Railroad) railroads serve the districts east, south, and northwest of Tsinan as convenient lines of communication. The districts west of Tsinan such as Tung Ch'ang and Lin Ch'ing, the Tsao district southwest of Tsinan, the Wu Ting district due north of Tsinan, the Li-I district southeast of Tsinan, the Teng-lai, Lungkow and Huanghsien districts and all the districts along the sea coast northwest of Tsinan are too far from the railways and the waterways. Some of them are several and others tens of days distant from Tsinan, in consequence of which political progress as well as commercial and industrial development lag deplorably. These are matters of the greatest importance. In determining the trunk roads and the branch roads, the above mentioned districts shall be considered the starting points.

3. The seven trunk lines of the province are to be designated as follows:—

(*a*) The Lungkow-Weihsien trunk road (Lungkow, Huang Shan-kuan, Chu Ch'iao, Yie Hsien, Sha Ho, Ch'and I, Weihsien).

(*b*) The Chefoo-Weihsien trunk road (Chefoo, Fu Shan, Ch'i Hsia, Lai Yang, Ping Tu, Ch'ang I, Weihsien).

(*c*) Weihsien-I Hsien trunk road (Weihsien, An Ch'ui, Chu Ch'eng, Chu Hsien, Lin I, I Hsien).

(*d*) The T'ai An-Yen Pien trunk road (T'ai An, Hsin T'ai Mang Yin, Lin I, Yen Pien).

(*e*) The Tsaohsien-Tsining trunk road (Ho Pien, Ho Chei Ting T'ao, Wu Ch'eng, Chin Chiang, Ta I Chi, Tsining).

(*f*) The Ping Yuan-Tsining trunk road (Ping Yuan, En Hsien, Kao T'ang, Ch'ing Ping, Poa Ping, Liao Ch'eng, Tung Chao Chia Lou, Yellow River Ferry, Tsining).

(*g*) The Ch'ang I-Ping Yuan trunk road (Ch'ang I, Shou Kuang, Kuang Lao, Pao Hsing, Kao Yuan, Ch'ing Ch'eng, Chi Tung, Yellow River Ferry, Shang Ho, Lin I, Ping Yuan).

Branch Lines

4. Ten branch roads branching from the above mentioned seven trunk lines:—

(*a*) Branch of the Lungkow-Weihsien trunk road (From Huang Shang to Chao Yuan).

(*b*) Branch of the Chefoo-Weihsien trunk road (From Lai Yang-Hai Yang-Weihaiwei to Wen Tong).

(*c*) Branches of the Weihsien-I Hsien trunk line:—

i. Chu Hsien to I Shui.

ii. Chu Hsien to Er Chao Shi Chui Shoa.

(*b*) Branches of the Tsao Hsien-Tsining trunk road:—

i. Ts'ao Hsien to Ch'eng Wu.

ii. Fu T'ai to Chin Hsiang.

iii. Yai I Chi of Chin Hsiang—Yun Ch'eng to Pu Hsien.

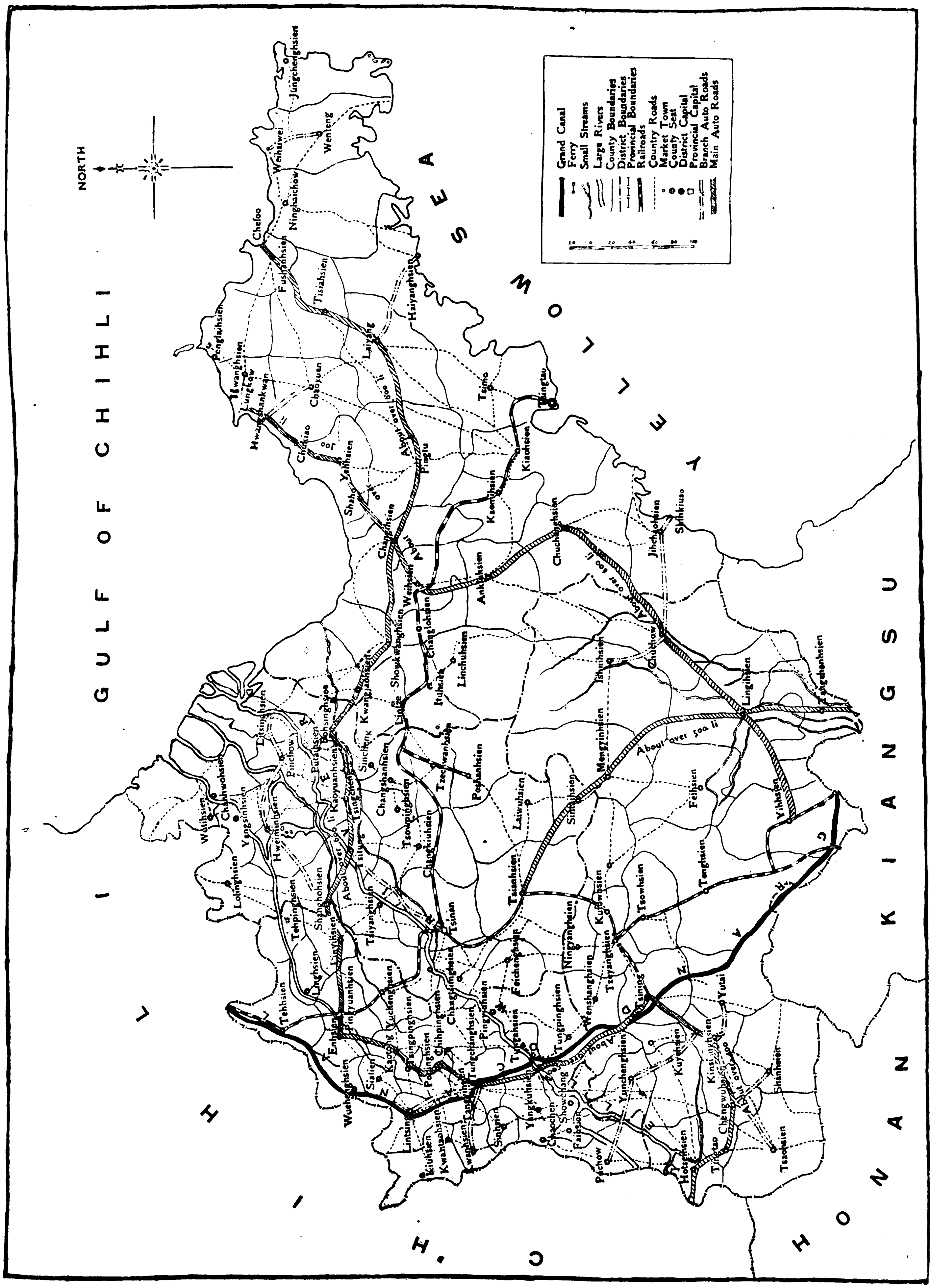
5. The above mentioned trunk and branch roads make a total of about 4,000 *li*. The surveying should be undertaken in sections and finished without delay. An investigation of the business conditions and of the places needing defense is to determine which roads are to be built by the government, which by the merchants and which by the joint efforts of the merchants and the government. The building program is to be pushed as rapidly as possible. A map of the various trunk and branch roads has been prepared and is open to inspection. The details for carrying out the work cannot be decided until the surveying and the necessary calculations have been finished.

Reasons are Given

The reasons for the trunk and branch lines are as follows:—

(1) For the Chiao Tung districts, thickly populated and rich in resources, and the districts along the coast line and bearing on the problems of defense, where formerly the merchants planned to build the Chefoo-Weihsien line, we think that there should be two trunk lines. We are not concerned at present with the places on the sea coast having water communication.

(2) In the Ts'ao Hsien and Tsining districts southwest of Tsinan and bordering on the provinces of Anhui, and Honan. owing to the extreme importance of communication and defense in these regions, the trunk line should have numerous branch lines to ensure convenient communication facilities.



Map reproduced by courtesy of "The China Press," Shanghai.

Map Showing Contemplated Road and River Improvements in Shantung. The program is a far-reaching one and, when carried out, will bring about an economic transformation of Shantung.

(3) The original provincial plan for the Chiao-I line has disappeared. Investigations made at the time, revealed that the Germans were planning to invest capital in railways to connect the Chiao-I districts with Tsingtao for the purpose of securing special privileges in the southwest districts. This was a very dangerous plot.

At present the Tsingtao question is not yet settled and foreigners control the situation. Now, it is proposed to let the trunk line in the Lin-I district connect directly with the two trunk lines of the Chiao Tung districts so as to avoid the control of foreigners as well as dependence on the Chiao Tsi railways.

New Proposal Made

(4) Formerly, it was twice proposed to build the Chefoo-Weihsien railway to connect with the Chiao-Tsi railroad. Now, some propose to connect such a line with the Chun-Pu railroad at Teihsien (Teichow). The building of such a railroad would require much capital and can hardly be carried out. We propose to build a road connecting with the trunk road of the Lin-I district. This will serve more conveniently the interests both of commerce and of defense.

(5) The administrative seats of the present "tao" and of the old "fu" are the political and commercial centres of the various districts. The main idea of this plan is to have the trunk roads go through these centres in accordance with the road building regulations issued by the Central Government.

(6) To have the trunk roads follow the old official roads ("Kuan Tao") will be easy and will also save time and money. In case the official roads are too distant, then the roads most convenient may be followed. Where there are no convenient roads and it is necessary to have short and direct routes, land may be purchased to facilitate such construction. After the actual surveying has been finished, this matter will again be taken up for final settlement.

(7) All branches are to be linked up with trunk lines. If, however, the conditions of certain places necessitate branch roads which cannot be connected with trunk roads, they may be linked up with railroads, waterways or rivers.

(8) Trunk roads and branch roads are all important, and in the matter of surveying, investigating and building in sections. such distinctions should not be made. Of the three methods of construction (1) by the government, (2) by the merchants, and (3) by the combined efforts of the government and the merchants, the second is the most important. The government emphasizing administrative matters in the interest of the local government and of places needing defense would first build the roads at such places, but the merchants emphasizing commercial prosperity and productive resources would petition the government to allow them to first construct the commercially important roads. If any merchants petition for permission to build a road, they are not to be denied on the ground of the precedence of roads.

New Projects Proposed

(9) In addition to the above mentioned trunk and branch roads, there are others, which on account of special circumstances, must also be built; such as the Tsinan-Lokou road, the Ch'ing-Ts'ao road, recently asked for by the merchants, the Poa Shan light railway, etc., and others like the road from Lin-I to Hsuchow in Kiangsu, or the road from Tung Lin to Chang Tei in Honan, the road from Tsaochow or Tsining to Weihuei in Honan, must be specially provided for.

(10) The proposed roads are to be built for motor truck traffic, but if merchants raise capital to build railroads instead they shall be permitted to do so, providing they furnish reliable evidence that they can successfully carry out their plan. (Recently merchants repeatedly petitioned to be allowed to build the Chefoo-Weihsien railroad). If they petition for permission to build a light railway instead, a motor car road is also to be built, because a light railway issued only for the transportation of goods and cannot be used for the transportation of troops or for travel.

(11) Besides the trunk and branch roads, there are the country and district roads which are of importance to agriculture. The responsibility for these rests upon the district magistrates who shall build in conformity with the rules laid down by the Ministry of the Interior. The building of these roads is to have as its object the advancement of agriculture, and such highways are not included in the program of building of trunk and branch lines.

Better Transportation

(12) The aim of this road building program is to construct roads throughout the whole province, in every district and to every county seat. If some districts seem disregarded, it is because the investigation has not been completed. After the Provisional Road Office has been established and the survey has been completed, the whole matter will again be taken up.

B Waterways:

Means are to be devised for improving the various rivers of this province, except the Yellow River and the Grand Canal which is under the care of the River Bureau and of the Nan-Yun Lake and River Conservancy Bureau.

Among the remaining rivers the Hsiao Ch'ing River which has its source in the springs of Ch'ang Ch'ing and Li Ch'ong and flows eastward fod 400 *li* through more than ten districts till it empties itself into the sea at Yang Chin-ken in Shou Kuang, should first be improved. Since the building of the Chiao Tsi railroad these districts are dependent upon this river for transportation in competition with the railway. Therefore, the improvements of this river so as to make steam navigation possible, must not be delayed. Examine appended map. (The survey was carried out by the Lake and River Conservancy Bureau). On the South bank of the Hsiao Ch'ing River, there are the Yu Fu River, the Pei Yun Lake, Hsin Chiang River, Ch'ing Ho Creek, Ma Ta Lake, U Pei River, Hsiao Fu River, etc. On the other bank there is the Chi Mei Creek. All these are either water reservoirs or swamps which overflow the Ch'i Tung and Chang Ch'ui districts so that only a tenth of tons of thousands of acres produce any crops.

In the Poa Hsiang district the Chi Mei Creek constantly silts up and overflows its banks. The Nan Wu dyke was built at the mouth of the Ts'ao Chia Creek to prevent the flood water from flowing eastward. Now, since the dyke is not in repair, the fields for more than 40 *li* are constantly flooded. The plan of improvement to deepen the branches and the bed of the Hsiao Ch'ing River and to control the current by installing more locks and building more dykes so that these streams may be controlled in time of flood and used in seasons of drought.

Waterways Important

(1) Since the Hsiao Ch'ing River is one of the most important waterways of the province, the Ministry of the Interior has announced that the river ought to be immediately improved and the Lake and River Conservancy Bureau has made a survey, prepared maps and issued a report. The river should again be surveyed and the work undertaken.

(2) When the rainfall is heavy the Grand Canal easily overflows with the result that the people of Tei Hsien and surrounding regions often suffer heavily. Although the Lake and River Conservancy Bureau has considered this matter it is feared that progress will be slow and completion indefinitely delayed. Therefore, the Provincial Road Bureau should consult with the Lake and River Conservancy Bureau so that the Canal shall first be repaired in the districts subject to floods and thus further disasters prevented.

(3) The rivers of Shantung are too numerous to mention, such as the Tsu Hai River, Ta Wen River, the I River, the Wei, the Mi River, the Mu River, the Chao Wang River, etc. Although they are of no importance as means of communication, for years they have not been improved, the dykes are damaged and the streams are silting. When the river survey is undertaken, attention should also be paid to these and streams which can be used as means of communication should be improved, but at present it is very difficult to present a plan for the improvement of these streams

Production of Abaca in the Philippines

It is the intention of the Philippine bureau of agriculture to immediately launch a campaign against the production of the low grades of hemp, unless the present market conditions materially change, and the quotations for the grades J-K-L and M are commensurately in proportion to the prices being paid for the better grades.

Present conditions indicate a decrease in the production of abaca fibre for 1920 as compared with that of 1919. However, the 1920 production will greatly depend on American market conditions. Should high prices rule, many of the abaca laborers who have turned their attention to the production of other export crops where they are assured a better return for their labor, may again be persuaded to return to the abaca fields.

The production of abaca in the Philippines by grades for the month of January, 1920, was as follows:

MAGUEY.

Grade.	Bales.
1	331
2	6,023
3	3,823
D	283
Total	10,469

TAGAL BRAID.

Grade.	Bales.
AA	57
BB	121
CC	79
DD	28
EE	000
Total	285

Grade.	Number Bales.
A	8
B	244
C	1,001
D	2,727
E	7,579
S1	1,807
S2	4,217
S3	3,370
F	10,595
G	4,994
H	2,221
I	12,313
J	22,836
K	9,198
L	9,825
M	3,217
DL	291
DM	185
OYT	1,957
Total	98,585

Fifty-one bales of machine cleaned Maguey and 197 bales of retted Sisal complete the list.

The primary object in the passing of the fibre law and the establishment of regulations governing the classification and the baling of Philippine fibres was to in directly assist the producers of Philippine fibres by giving them more accurate information regarding the proper method for the preparation of their fibre for the market and by establishing uniform grades to give them more accurate data on market conditions so as to enable them to judge which grades they could more economically strip according to the prices being paid for the different grades.

No uniform standard of grades existed prior to January 1, 1915, and for this reason it was impossible for the producer to know what type of fibre he should strip in order to get the maximum return for his labor.

Mr. Don D. Strong, fibre expert for the bureau of agriculture, is devoting most of his time in an effort to untangle the Philippine hemp knot.

Shanghai War Memorial

The Shanghai War Volunteer Memorial Committee met in the Municipal Council room, Shanghai, on May 1, to receive the report of the advisory committee of architects—Messrs. S. J. Halse, R. C. Turner, and H. F. Boissezon—in connection with the competition for a memorial design. Four sets of drawings were submitted, and one set of models, and the committee unanimously adopted the architects' recommendation that the awards be made as follows:

First prize, Tls. 750, Messrs. Stewardson and Spence.

Second prize, Tls. 500, Messrs. Graham Browne and Wingrove.

Third prize, Tls. 250, Mr. A. Llewellyn Taylor (Messrs. Arts and Crafts, Ltd.).

The winning design takes the form of a massive granite pedestal some 40 ft. high supporting a bronze statuary group representing victorious Peace offering consolation the widows and orphans with other decoration, and, appropriate inscription (which will be in Latin), with space for the Roll of Honour.

The monument rests upon a raised paved platform covering the greater part of the space available, and this is surrounded by a balustrade of solid design and platform approached by a flight of six broad, shallow steps, of the maximum length obtainable, a feature which always gives dignity to such a monument. In order to make the most of the space obtainable and also to form an impressive bastion of support as viewed from the river, it is suggested that the east face of the balustraded enclosure be carried out some feet over the sloping bund face, a feature which might be still further developed with a broad segmental bulge, which would emphasize and strength the podium to a greater degree from the water front and give greater space round the base of the monument. The material suggested is Honan or Hongkong granite, with paving design delineated in the two materials which are of lighter and darker shades of grey. The figures would be bronze and would be modelled in Europe.

The cost of this memorial, depending very largely upon the present price of bronze, is only approximately given, and as the emblematical figures suggested by the designers may have to be modified; an estimate will not be announced until the matter has been gone into in more details.

South China Silk Trade

Silk export returns from the South China field for the calendar year 1919 promise a marked improvement in this trade in the near future. In the first place silk rereeled according to American ideas on the system known as the "Grant reel" has been produced in considerable quantities, with the result that practically the whole of such silk was taken up by American buyers at prices ruling considerably higher than those obtained for silk of ordinary Chinese reels. During the year, also, the Comite International pour l'Amelioration de la Sericulture dans le Kwangtung at Canton completed a series of tests extending over all the year's crops, which have proved that if the Pasteur process of eliminating silkworm diseases be carried out on a comprehensive scale a very large increase in production, as well as a very marked improvement in the quality of the silk, may be counted upon in South China. This international committee was inaugurated upon the initiative of the French Chamber of Commerce at Canton, but the result of its work will be of particular benefit to American importers, since the improved method of reeling mentioned is in line with their efforts.

American demand controlled the silk trade of the whole of South China during practically the entire year. The new season commenced with a burden of something like 5,000 bales of last season's silk on hand, which was composed almost entirely of grades of silk usually sold in France and in Europe generally. The slack demand from Europe early in the season led reelers to produce a larger proportion of silk for the United States than usual from the midseason crops, the result being that when Europe finally came into the market it was short of stocks. The comparatively high exchange for silver as against the franc and pound sterling also affected the demand from Europe very seriously.

The total exports of raw silk during the season are placed by the Canton Chamber of Commerce at 57.030 bales, as compared with a total of 40,313 bales for 1918, the exports to Europe showing a decrease of 1,870 bales, while those to the United States showed an increase of 18,587 bales. Exports of waste silk for the season are placed at 29,448 bales, as compared with a total of 41,386 bales in 1918, exports to Europe showing a slight increase, while those to the United States showed a marked decrease. Exports of pierced cocoons for the year are placed at 5,701 bales, as compared with 7,426 bales in 1918, shipments to both Europe and the United States showing a decrease. During the year Japan took 2 bales of waste silk and 1 bale of pierced cocoons, as compared with 4 and 16 bales, respectively, in 1918.

The calendar year 1920 opens with a prospect that the whole of the current season's production will be cleared by the beginning of the new season in May, although continued high exchange and the prospect of silver remaining at its present level make the purchase of Chinese silk for the American market a matter of great difficulty because of unprecedented gold costs.

Across the Gobi Desert by Packard Car

A STRIKING proof of how the automobile is opening up territory that has been hitherto shunned by all but the most daring explorers, is shown by the recent trip over the Gobi Desert by two Packard Twin Sixes, according to the report received by the Packard Motors Export Corporation.

These two cars were part of a party of five cars and two trucks which left Tientsin for Urumchi, about 2,000 miles west of Tientsin by caravan trail, to prove that motor transportation was possible and that goods could be brought from the interior to the market in a much more efficient manner than could be obtained through the use of camels and other beasts of burden. Lieut. George Moskovski, formerly of the Polish Army, was in charge of the trip, and to him are we indebted for the story.

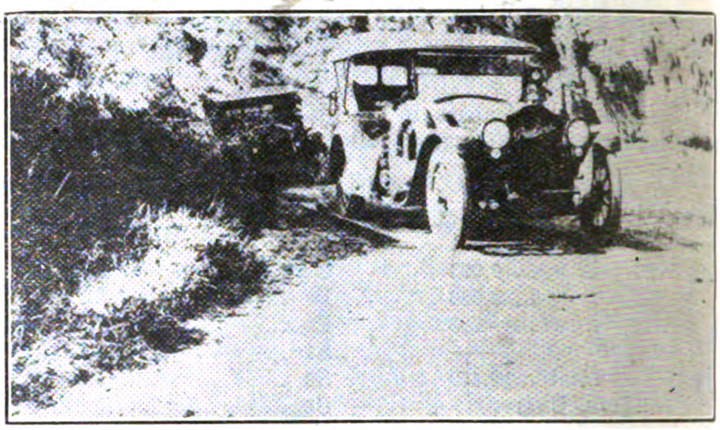
Making a So-called Road Passable.

The good roads, if they may be dignified by that term, ended at Kweihwacheng, and three cars and the two trucks were forced to put back. The two Packard Twin Sixes, however, continued, and made the entire trip without serious accident. Both carried trailers. They were followed at several days interval by camel trains which carried supplies for the return trip as gasoline stations are not exceptionally numerous in Western Mongolia.

The trail proved very uneven, being for the most part tortuous, rocky and indistinct. Often the cars travelled along dried river beds where innumerable boulders proved a great handicap. Long stretches of deep sand added to the difficulties of motoring, and in one instance, the sand was so deep that one of the trailers had to be abandoned.

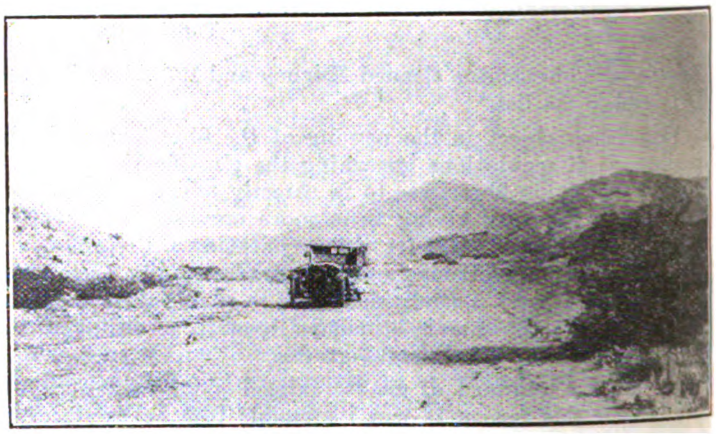
Stuck in the Sand 300 Miles from Kukuirgou.

At a point about 700 miles west of Kukuirigou, and 300 miles north of Kanchow the motorists found themselves confronted by a long range of mountains and sand hills through which the guide was unable to discover a pass. As this region was the very heart of the desert and practically uninhabited, there was no one to turn to for further information, and the few natives seen fled precipitately from the "devil wagon." Eventually, a pass was discovered and the party proceeded.



One Machine Helps the Other Out of a Sand Hole.

In speaking of this region Lieut. Moskovski says "In some places there was no sign of human habitation for hundreds of miles, nothing but a bleak, barren expanse of table land." The road through this region, however, proved surprisingly good, and game was plentiful. In spite of the handicap of the trailers the two cars finally reached Urumchi about two months after leaving Tientsin.



Rocky Country on the Return Trip.

The actual travelling time was, of course, but a small fraction of this period. The cars were unquestionably the first motor vehicles ever seen by the natives, and in most cases their mere appearance inspired a terror that would have been highly amusing were it not for the difficulty of securing information that ensued.

The same hazardous features were encountered upon the return trip, except that the tourists had the advantage of knowing the trail and the obstacles before them.

The trip proved that while it is entirely possible to substitute the motor car for the "ship of the desert," the old methods will likely continue for sometime, as only a car of the very highest quality and with a super-abundance of reserve power can stand up under the trying conditions of the trip.

An interesting feature of the trip is that five sets of tire chains were used up, yet the original set of Goodyear cord tires lasted throughout the trip.

Engineering, Financial, Industrial and Commercial News

RAILWAYS

Revenue of Japanese Railways in April.—The Japanese Government Railway reports that during April, on all the State lines, 5,314,658 tons of cargo were carried, the revenue of the freight service having come up to Y.11,682,170. The daily average of cargo carried was 177,155 tons. Compared with the corresponding date of last year, the daily average shows an increase of 5,400 tons. The revenue shows an increase also of Y.389,406 per diem.

New Line Projected from Sunning City to Hoi An City.—Mr. Mak, a wealthy Cantonese merchant from the Straits Settlements, proposes to float a company for the construction of a branch railroad from Sunning City to Hoi An City.

Japanese Railways Improvement.—The Japanese railway board has decided to start the work of doubling the present two track road on the Tokyo-Kobe line at the coming fiscal year to be finished in seven years.

The Japanese Government announces that the Arima Light Railway has been nationalized and transferred to the control of the Government Railways. The purchase price was Y.384,772.35, for which the Government has delivered to the company operating the line public bonds the face value of which is Y.434,800.

Proposal to Have Russian Financiers Superseded by Japanese in Ping Hei Railway Loan.—On account of the Chinese Government's reported proposal to have new arrangements in the Ping Hei Railway Loan, which was formerly concluded between the former Russian Imperial Government and China, with a view of introducing Japanese financial aid, certain members of the Senate made a vehement protest against the step to be taken

Dr. C. C. Wang Takes Over Management of Chinese Eastern Railway.—Dr. C. C. Wang, former director of the Peking-Hankow line, formally assumed his duty as Chinese resident manager of the Chinese Eastern Railway. His duty is to co-operate with M. Pimenoff, the Russian manager, in matters concerning the administration of this Sino-Russian line in North Manchuria. General Pao Kuei-ching left Kirinfu on April 22 for Mukden for consulting with General Chang Tso-lin about military preparations along the Chinese Eastern Railway for the protection of Chinese and foreign residents within its zone and the establishment of a Manchurian Bank for Fengtien, Kirin and Heilungkiang jointly. The capital will be subscribed by the three provinces.

Chinese Financiers Urge Redemption of Railways Under Foreign Control.—Liang Shih-yi and the Chinese financiers connected with his Five Families Bank, the strongest native banking group in North China and a candidate for admission into the New Consortium, if that group is ever formed, are urging upon the Government the redemption of those national railway lines still under partial foreign control. Liang and his friends guarantee that the funds necessary for this purpose can be obtained from his group and from other prominent Chinese bankers.

It is Liang's plan to begin with the redemption of the Peking-Mukden Line, on which only $1,500,000 is due to the British interests which financed its construction. Other lines financed by foreigners and now under partial foreign control will be redeemed later.

Officials at the Ministry of Communications, while in sympathy with the scheme, express doubts as to whether it can be realized. Aside from the financial obstacles in the way of putting it through it is believed that the foreign interests concerned will not agree to it. Their contracts have in most cases, a number of years to run, and there is little likelihood that they will consent to forego the privileges accruing them from these contracts.

COMPLETE JAPANESE-AMERICAN ACCORD

Carried Back to the United States by Thomas W. Lamont—Financial Consortium Attains Practical Shape After a Year of Discussion and Delay.

A complete and satisfactory agreement has been reached as to the political and other features of the Chinese Financial Consortium which have been subjects of discussion between the bankers and governments of Japan and America since the new Consortium was organized at Paris in May, 1919. Japan's special rights are fully recognized and at the same time care has been taken to conserve the rights of China within her own national domain. To assist in perfecting the understanding and to secure the necessary international team-work, Ambassador Morris has accompanied Mr. Thomas W. Lamont, head of the American group, on his return to the United States.

All concessions and options in China possessed by each banking group are pooled, except those upon which substantial progress has been made. Borrowing is limited to the Chinese central government, provincial governments, and to corporations guaranteed by the central or provincial governments. Loans for individuals or private enterprise do not come under the purview of the Consortium. Equality of opportunity is guaranteed, irrespective of the amount of money raised from time to time in any particular country.

Federated Malay States Railway Expansion.—The appropriations for extending the service of the Federated Malay States Railway, which involved about $54,000,000 in 1919, are apt to be considerably increased this year. Contractors are already working on new wharves and harbor improvements at Prai, the terminus of the railway system at the settlement of Penang, where the doubling of the line and other alterations will mean an approximate expenditure of $1,700,000 in 1920. Another work that has been recently sanctioned is the construction of a causeway across the Straits of Johore, at a cost of $1,500,000. A further sum of about $1,135,000 will be spent to double the line and erect a new station, godowns, etc., in Singapore. The work on the line from Pasir Mas to the Siamese border, which it is expected will be completed next year, will involve the expenditure of over $2,500,000 in 1920. Through train service to Siam was inaugurated in July, 1918, which has evidenced that a considerable trade will be forthcoming when the shortage of rolling stock is relieved, and add materially to the importance of Penang as a terminal port for international commerce. In 1918 the gross receipts of the railway were about $7,000,000, and the net profits $1,800,000.

New Electric Railway.—At Odaru, Hokkaido, a new electric railway is being laid by the Hokkai Chuo Electric Railway Company, projected by Mr. Kei Isono and other local businessmen. According to the charter granted by the Government Railways recently to the company, the projected line is 27.40 miles in length, connecting Temiya, Odaru, with Nashima Park at the outskirts of the town. The gauge of the line is 3.6 feet. The company plans to build the line at the expense of Y.7,000,000.

Chinese Protest Against Proposed Mine Railway.—The provincial assembly of Shanhsi has sent in a despatch to the civil governor concerning the alleged granting to the British firm, Peking Syndicate in Peking, the right of building a railway from Chinghua in Honan to Tsechow in Shanhsi for the development and transportation of iron and coal minerals. The memorialist say that through the Peking-Hankow and other railway, the vast mineral deposits of this province can be exported to other provinces and also to foreign countries and that if so, the mining and transportation interests will be entirely in the hands of foreigners.

Further, in accordance with the stipulations of the purchase agreement signed between the province of Shanhsi and the Peking Syndicate about ten years ago when the British interests consented to restore their railway and mining concessions to the people of Shanhsi, all railways in connection with mines must be built by the natives with pure Chinese capital. The central government are requested to take note of the above-mentioned purchase agreement.

SHIPPING

New Australia-Japan Service.—It is understood to be the intention of a Japanese firm to commence a shipping service between Australia, China, and Japan. Negotiations are proceeding for the establishment of the line, which, if successful, will lead to a direct service between Melbourne, Sydney, and Queensland ports and the East.

It is expected that important developments will occur in the Eastern trade. The purchase of the E. and A line by the Lord Inchcape combine has led to a revival of this company. Already the new interests have decided to obtain additional tonnage. Negotiations are now proceeding for the employment of other vessels.

New Dutch Shipping Company.—A shipping company has been formed entitled "The Society of United Dutch Shipping Companies," with a capital of two hundred million guilders. The new concern will operate under the names of the "Holland-East Asia," "Holland-British India," "Holland-Australasia" and "Holland-Africa" lines.

Dollar Company Starts First American Boat on Yangtze Service.—The *Mei Chuen,* 300-ton steamer, recently purchased by the Robert Dollar Company, sailed from Shanghai some time ago as the first of what is hoped to be a regular line of American cargo and passenger steamers on the Yangtze River service. The dimensions of the *Mei Chuen* are as follows: length 190-ft., breadth 30-ft., depth 8-ft. It carries 300 tons of cargo at 5 : 10 draft and was built for the Yangtze service. Its passenger capacity is 17 first, 42 second and 180 third. The speed is 13½ knots. The ship was purchased from the Standard Oil Company.

American Shipping Companies in the Far East Combine.—The United States Shipping Board Trans-Pacific Conference, composed of the shipping companies employing vessels allocated by the Shipping Board, has been organized, with headquarters in Shanghai and with the head office for Japan in Kobe. The chief aim of this new combination of American shipping interests in the Far East is dependable freight service and dependable freight rates.

Mr. R. O. Baker will be chairman of the conference for Japan, with offices in Kobe. The following operating lines are members of the combine: Struthers and Dixon, Robert Dollar & Company, Pacific Mail Steamship Company, The Admiral Line, Los Angeles-Pacific Navigation Company, and Frank Waterhouse & Company.

New Line from Hongkong to Havana.—The establishment of a line of steamers for a service from Hongkong to Havana will play a large part in the development of the China rice trade in Cuba and the West Indies, where Chinese rice is one of the staple foods of the islands. China in return is a vast market for Cuban tobaccos and cigars, and the new line will make possible an increased reciprocal trade at a reduced cost because of its directness. The Southern United States will also be given an outlet to foreign trade in China, as New Orleans has been selected as a port of call for vessels on the return trip.

New Freight Service Coming to Far East.—The Green Star Line plans to run a weekly service from Baltimore. It is believed that the first steamer will be despatched immediately. As far as known the new line will be composed of United States Shipping Board ships. The first to leave will be *Eurana,* followed by the *Lancaster, Canivas, City of Omaha, Chipchung* and the *Maine.*

The ports of call in the Far East will be Yokohama, Kobe, Shanghai, Hongkong and Manila. When these ships begin to arrive at Yokohama, in addition to those already operated by the Green Star Line and the Admiral Line, it is more than probable that more records will be broken in regard to the number of steamers calling at that port.

T.K.K. to Operate a Line to Portland.—The Toyo Kisen Kaisha is planning to open a new freight service to Portland, Oregon, according to a statement made by Mr. S. Hara, chief of the Navigation Department of that company.

Mr. Hara says that the recent improvements made by the city of Portland in the harbor and in the facilities for quick handling of freight have been an inducement to open up a line from Japan to that port. Previously the long run up the Columbia River and the difficulty in crossing the bar at the mouth of the river had been obstacles to the establishment of a regular line and only tramp steamers have made occasional calls.

The present plan is to have a monthly service over a triangular route. The Japan port will be either Kobe or Yokohama, and the ships will call at San Francisco on the outward voyage and sail from Portland direct to Japan. If business warrants and freight offerings are sufficient, San Francisco will be dropped and a direct line to Portland will be operated. Passengers will be carried if the line is a success.

The first steamer to be despatched is the *Koyo Maru,* an 8,000-ton steamer, about the first of August. Two 10,000-ton freighters are now building at Tsurumi which will be ready to sail on schedule. In addition to the steamers for the Portland run, six other 10,000-ton freighters are now being built for the T.K.K. but it has not been definitely decided as to where they will run.

The South American line is to be increased by the addition of three steamers of the type of the *Anyo Maru* and having a tonnage of 18,000 tons. These are also on the ways at Tsurumi and when they are completed, monthly sailings to South American ports will be inaugurated. At present the schedule is one steamer every two months.

SHIPBUILDING

Launching of New Japanese Battleship.—The new Japanese battleship *Mutsu,* 38,000 tons displacement, construction of which was begun in 1918, is to be launched at the Yokosuka dockyard on May 30.

Launch at Hongkong.—The steamer *Szechuen* was launched at the Taikoo dockyard on May 8. The vessel has been built to the order of the China Navigation Company for coast trade between Hongkong and Shanghai.

O.S.K. Will Reconstruct Boats on Formosa Run.—The O.S.K. which for many years has been operating a weekly service between Kobe and Formosa has decided to improve the boats used on that run. About Y.1,000,000 will be devoted to making the *Hongkong* and *America Maru* two of the finest boats in the passenger service on the Far Eastern runs.

The *Hongkong Maru* will be docked at the Mitsubishi dock in Kobe and will be completely refitted. It will take about five months to overhaul the vessel and as soon as it is completed the *America Maru* will be taken off the run and refitted.

The *Kasado Maru,* which is at present on the South American run, will replace the *Hongkong Maru* while the latter boat is being reconstructed.

Development of Nippon Yusen Kaisha Fleet.—The Nippon Yusen Kaisha has ordered two passenger steamers of a superior type from Glasgow. Shortly after announcing a plan for building or buying 500,000 tons of freighters and passenger ships during the next five years, the company ordered two freighters of 8,000 tons gross each from the Mitsubishi Shipyard and also three freighters of a similar size from the Yokohama Dockyard. The passenger ships now ordered from England are to be used for the inauguration of an express passenger service between Nagasaki and Shanghai. The two passenger ships will each have a capacity of 4,500 tons gross, with a speed of 18 knots. Their price is believed to be between Y.500 and Y.600 per ton.

In pursuance of the programme for the construction of 500,000 tons of new ships, the Nippon Yusen Kaisha has also contracted to buy three freighters—one of 6,400 tons deadweight from the Uraga Dockyard, and two of 11,000 tons deadweight each from the Yokohama Dockyard Company. The Uraga ship is valued at Y.325 per ton and is to be delivered next July; the price of the two other ships is Y.320 per ton, one to be delivered in September and the other in October.

INDUSTRIAL

Growth of Cotton Spinning Industry in Nagoya.—Many of the cotton-spinning companies have increased their capital since the beginning of the year, and many more plan to increase their output by establishing new mills, according to a translation from the Nagoya "Shin-Aichi Shimbun" transmitted by American Consul H. F. Hawley. Owing to the high price of land and the shortage of power in Tokio and Osaka, the attention of concerns intending to build new mills has been turned toward Nagoya and its suburbs, which offer superior advantages both in point of power supply and transportation facilities.

Capital Increase for Oji Company.—The Oji Paper Manufacturing Company will refer to a semi-annual meeting of shareholders to be held in the Imperial Japanese Railway Association a plan for increasing the company's capital from Y.25,000,000 as at present to Y.50,000,000 by the issue of new shares to the company's shareholders.

Flour Factories in Japan.—It is reported that in April the number of Japanese flour manufacturers was 19,074, which was an increase of 1,195 over the same time last year. Their estimated production was 740,850,000 *kin* valued at Y.98,174,000. Compared with the previous year, the volume of production shows an increase of 12.5 per cent., but the value shows such a big increase as Y.32,270,000.

Promotion of Industry in China.—The Chinese Ministry of Commerce and Agriculture and the Ministry of Finance are jointly considering plans for the organisation of a National League for Promotion of Industries. Tentative plans are suggested as follows:—

1—From April this year to February next year preparations will be made and in March the League will open for regular work.

2—The headquarters of the League is to be at Tien Tan, the Temple of Heaven, a fund of three millions will be appropriated from the Bureaux of Communication, Salt, Revenue and Tobacco and Wine.

3—The League will have a president and several vice-presidents, who will be selected for their ability and reputation, irrespective of party affiliations. There will be one Chief Director and several assistant Directors. Liang Chi-chao is said to have been selected as chief director.

Philippine Hemp Rope Factory at Amoy, China.—A new industrial venture for Amoy is the establishment at Siang-Am, on Amoy Island, of a Philippine hemp rope factory, controlled by Chinese with Philippine interests. The capital is said to be $120,000 silver, and the initial output will be 2,600 pounds per day, to be increased, if the demand warrants, to a possible maximum capacity of 14,000 pounds. It is thought that although the cost of production will be about the same as in the Philippines the Chinese company will be able to compete successfully in the local market, as there will be no transportation charges to pay on the finished product. The plant, which has been

Keeping Far Eastern Trade Channels Open

The service which the Irving's Foreign Division provides for merchants and producers in the Orient covers the full range of business and personal requirements in international banking. To facilitate export and import operations and to supply the financial needs of individuals, the Foreign Division

- Sells checks and makes cable transfers
- Issues commercial credits against exports and imports
- Collects clean and documentary drafts
- Provides facilities for American credit inquiries
- Offers counsel on market conditions in America
- Supplies emergency aid in handling shipments

And—when sales are completed and shipments have been made, the Foreign Division purchases approved bills of exchange in dollars or in Far Eastern currencies, covering goods actually sold to responsible buyers.

IRVING NATIONAL BANK

WOOLWORTH BUILDING, NEW YORK

under construction for the past six months, is equipped to manufacture all classes of rope now on the market from the thinnest up to about 3½ inches in thickness. The machinery, tools, and equipment are of American manufacture, having been purchased through agents in the Philippine Islands.

AVIATION

Aviation in China —Peking-Tientsin Flight.—A Handley-Page aeroplane journeyed from Peking to Tientsin and landed on the Racecourse on May 7. There were 14 passengers on board, including the British Minister, Mr. B. F. Alston, C.B.

American Aviation Concern in China.—It is reported that American capitalists had subscribed $600,000 to establish an aviation company in Hongkong, to be called the Far Eastern Aviation Transportation Co. The regulations provide for its registration in Hongkong; for the establishment of a route from Canton, via Hongkong, Swatow, Amoy, Foochow, and Ningpo, to Shanghai; for a route from the Philippine Islands, via Formosa, to Foochow; and for the carrying of passengers and mail. It is anticipated that the annual net profits will approximate $200,000.

Anglo-Chinese Aviation Co.—A scheme is said to be afoot among British capitalists for the establishment of an Anglo-Chinese Aviation Company. According to the present programme, it is reported, lines are to be established between London and Shanghai via Egypt, Bombay and Hongkong. It is estimated that a flight between London and Peking will take four days and eight hours.

HARBORS

A Harbor Map of Shanghai.—A new map of the Shanghai Harbor has been compiled from the surveys of the Whangpoo Conservancy Board and published by that body. The map is an exceptionally fine piece of work. Each section of the harbor with its moorings is shown in considerable detail, all the wharves, godowns and factories on either side of the river and also the river training works.

Conservancy Work at Canton.—During recent months the work of conservancy has been carried on a considerable length in the Canton district. Many of the old dikes has been repaired and raised, unnecessary bends taken away, and new dikes constructed in their place. One continuous reconstructed dike now borders the right shore of the East River from Paklinwoo to Sheungnam, a distance of 10 miles. Altogether, 12 miles of dikes are now completed. Only lack of funds prevents the Conservancy Board from opening up work on a larger scale after the rainy season is over. With the present funds at their disposal the Board contemplate work at Lupao in the North River the next dry season with which it is hoped to control the waters that flood Canton.

Development of Amoy Harbor.—Extensive developments at Amoy including improvement of the harbor, building of a system of piers that will be connected directly with the Amoy-Changchow Railway and the repairing and extending of this railway are to be carried out in the coming months and will have the effect of adding vastly to the importance of the Fukien port, now given over almost exclusively to imports. A new source of coal from undeveloped fields ultimately to be tapped by the rail line is a detail of the general scheme which is being carried out by the Chinese government. Under an agreement that has been reached the railway is to be restored to commercial uses and a link extending the line on to Changchow is to be built at once. This is for a distance of 12 miles. About eight miles on beyond Changchow is an area rich in coal that has had little or no development and a plan to extend the railway to this coal field is under consideration. A project also has been advanced to swing the rail line southward with the purpose of connecting in time with the southern system of government rail lines in Kwangtung province The necessary funds have been made available for the construction of the line and the carrying out of harbor improvements. A pier system will be established on the mainland not far from the railway station. A new reinforced concrete wharf is already being constructed for the railway. It will carry three tracks of railway lines and be completed in about 18 months. The competition of the work will vastly increase commerce between Fukien province and coastal points in China, providing export cargo for connections already established with Formosa, Hongkong, the Philippines, Indo-China and as far south as Singapore in addition to the coastal trade in China. With the completion of the pier system vessels up to 3,000 tons will be enabled to dock at piers and connect directly with the rail line.

Harbor Improvements in Manila.—The Governor-General of the Philippines has been authorized to float bonds to the amount of P.12,000,000 in the United States, the funds to be used for the improvement of Manila Harbor.

New Wharf Office Building for Dairen.—The new elegant wharf office building now in course of construction at the south of the present Wharf Office, on Dairen Wharves, will be finished by about August and will be occupied by about October.

To Link Singapore with the Malaya Peninsula.—On May 1 the Governor of the Straits Settlements tipped the first load of granite into the Johore Straits at Johore for the causeway to be constructed between Singapore and the mainland.

The New Port of Lungkow.—A sub-customs station has been established at Lungkow on account of the completion of the cement wharf built by Andersen, Meyer & Company. Both foreign and native steamers, under one thousand two hundred tons, can discharge their cargoes at the new wharf without using sampans hereafter. The Chinese merchants say that Lungkow will become one of the best sea ports of north China in the course of the next decade if both official and merchants pay attention to develop it in competition with the Japanese at Tsingtao in the future.

Shipbuilding Yard for Antung.—It is proposed to construct a suitable dockyard just below the Japanese Settlement, on the bank of the Yalu River, at Antung, and there regularly to construct auxiliary powered sailing vessels of several hundred registered tons suitable for plying to Japan, Korea, and North China.

A New Port at Hulutao.—The Chinese Government has decided, it is reported, to commence the work of constructing Hulutao into a commercial mart in August this year. A sum of $5,000,000 has been voted for the expenses to be incurred in this undertaking, and the Central Government and the Fengtien provincial authorities will raise the funds jointly.

Proposed Harbor Improvement in Japan.—The Moji Harbor Construction Company has just been floated at Moji with a capital of Yen 10,000,000. The new company proposes to construct harbor accommodations along the most advanced lines.

The municipal authorities of Amagasaki, a rapidly-growing commercial and industrial town, between Osaka and Kobe, are elaborating plans for establishing harbor facilities. So far the authorities have decided to erect two dockyards, specially adapted for accommodating coasting ships of about 300 tons.

Opening of Taku Port Delayed.—The opening of Taku as a sea port having been sanctioned, the River Conservancy Department is reported to be clearing the water ways. Owing to the lack of funds, the programme will have to be delayed.

ELECTRICAL ENTERPRISES

Japanese Trams Transport Millions.—According to recent investigation by the Tokyo Electric Bureau, the number of passengers carried last year on Tokyo trams was 395,199,539. Gross receipts were Y.17,128,677.19, and the total distance travelled was 45,827,528 miles. This is an increase of 58,495,816 passengers and Y.2,581,581.22 over the previous year.

New Chinese Wireless Plant.—On account of the large number of troops stationed at Tunghsien in the vicinity of the Metropolis the Chinese Government has recently made a proposal to erect a wireless station there in order to facilitate the transmission of intelligence. It is learnt, says the "North China Standard," that the Japanese firm of Mitsui Bussan Kaisha have undertaken to erect the wireless station for a sum of twenty-five thousand dollars for which an agreement has been already entered into by the two parties.

Mr. Ho Yam-tang, the promoter of the proposed Electric Company at Shatao, Namhoi District, has already raised $20,000 of the capital required.

A New Electric Company for Canton.—$20,000 have been raised already for the proposed Electric Company at Shatao Namhoi District.

Chinese Wireless.—The Chinese wireless stations were opened on May 1 for the transmission of commercial and news despatches. The rate per word to be charged is declared to be the same as that through the telegraphs. The Peking press expresses the hope that this will add to the country's facilities of communication, because the land wires have long been a disgust to the public.

New Wireless Station in Japan.—The new wireless offices at Fukushima prefecture, Japan, were opened for business in May. The dispatching office at Hara-machi will for the present be used for receiving purposes only. The receiving capacity of the offices is estimated at 500 messages daily. The opening of the new stations is expected to relieve much of the congestion in telegraphic circles, especially between America and Japan.

Mono-Rail Service Proposed for Tokyo.—To relieve the congestion of travelling in Tokyo and as an auxiliary to the municipal electric car service, several business men of the capital, including Mr. Yoshio Naito, have approached the Government for permission to build a mono-rail electric tramway over the rivers and canals in Tokyo

The scheme proposes to start the line near Shimbashi, over the canals, thence over the Sumida River as far as Yoroibashi, near the Stock Exchange. The terminus will be Tabata on the Government railway. Each car will be capable of accommodating 50 persons and will be run at an average speed of about 25 miles per hour. The proposed company is to be capitalized at 15,000,000 yen. The estimated cost of building the line is about Y.1,630,000 per mile.

Progress of Electrical Development in Japan.—Seven separate concerns applied for permission to develop power from the Hida River, in the vicinity of Nagoya, and representatives of them all are considering the organization of the Hida-Gawa Electric Co., to be capitalized at $14,955,000. Another combine reported from the same source is the unification of the power supply of Nagoya and neighboring districts under the control of the Nagoya Electric Light Co., which has bought half of the shares of the Bishu Electric Co., and is negotiating to secure control of the Ichinomiya Electric Light Co., the Inazawa Electric Co., the Gifu Electric Co., and the Yokkaichi Electric Co. As a result of the efforts of the governor of Miye Prefecture representatives of six big electric companies in Miye Prefecture, the Hokusei, Iwakura, Tsu, Matsuzaka, Ise, and Toba, have been in consultation in regard to a possible combination of all the electric companies within the Prefecture, to be capitalized at $4,985,000. With the double purpose of obtaining additional income and of controlling water rights, the authorities of Toyama Prefecture are contemplating the establishment of a large hydroelectric plant under Prefectural administration, to develop 37,000 kilowatts of power from the Joganji River. It is expected that this will be sufficient to supply all present demands for power within the Prefecture and leave a surplus to be sold to Kyoto and Osaka. Another power company recently organized in this district is known as the Etchu Electric Power Co., having been granted a license to utilize the Wada River, from which it is expected to develop 10,000 kilowatts of power.

High Speed Electric Line Tokyo-Yokohama.—Two years hence the journey between Tokyo and Yokohama, which at present takes some forty minutes by electric train, is expected to be reduced to 20 or 25 minutes on the completion of the projected new high speed electric railway between Shibuya and Yokohama. The work of construction will be started next August at the estimated cost of 20 million yen by the Musashi electric company and be completed in a year and a half, the line being expected to be open to traffic about May 1922.

PERSONAL

Mr. J. Paul Jameson has been appointed first American Consul at Kalgan.

Baron Hayashi to go to London.—Viscount Chinda will shortly be relieved of his duties as Ambassador to Great Britain and will be succeeded by Baron Hayashi according to the Japanese press. Baron Hayashi is at the present time the Governor-General of Kwantung.

The retiring Ambassador to London has been abroad in the diplomatic service for the past 10 years and has made a request that he be relieved and allowed to return home, as his health is somewhat impaired.

Outside of a short time in Rome, the diplomatic service of Baron Hayashi has been in the Orient and his appointment to the important post at London is regarded as a well-deserved recognition of unusual merit.

EDUCATIONAL

Salt College to be Established in China.—The Central Salt Administration has obtained the permission of the Government to establish a Salt College, similar to those established by the Postal and Customs Authorities. The College will soon commence work and an entrance examination will take place for those who desire to join the college. There will be a special class, in which only those who have been sent to the Central Salt Administration by the Cabinet after passing the civil examinations will be admitted, but this class should be limited to twenty persons. After taking the prescribed course these special students will be given important appointments in the provinces. Ordinary candidates will be taken from among those who successfully pass the entrance examination, and after graduation these students will be given appointments either in the Salt Commissioners' Offices or the District Inspectorates. A notice has been issued by the Administration to the effect that 50 students who possess diplomas of Middle Schools will be admitted after examination. Twenty of them will be put in the Preparatory Class and every year new students will be taken. No recommendation letter will be considered, but only those who are properly qualified will be admitted.

Schools for Children of Railway Employees in China.—The Board of Railways Educational Department has opened one higher and 14 primary schools at various stations along the Peking-Mukden, Tientsin-Pukow, Peking-Hankow and Peking-Suiyuan lines for the education of the children of Government Railway employees. Plans are laid for the opening of a railway technical school next year. Mr. Yeh Kung-chow, former Director of the Peking-Kalgan Railway, proposes to establish an Academy at Tientsin to enable the students of the above schools to pass through a higher course.

National Educational Convention to be Held in Canton in October 1920.—The Civil Governor of Kwantung Province has promised to appropriate the sum of $3,000 to the Education Association for defraying the expenses of the preliminary meeting which will be held early in June for the purpose of preparing everything thoroughly before the National Educational convention, will be convened in Canton on October 10 next

CONSTRUCTION

Fuller Company of the Orient in Harness.—The George A. Fuller Company of the Orient, a subsidiary of the George A. Fuller Company of New York, has been organized in Japan and already has contracted to build two big office buildings in Tokyo for the Nippon Yusen Kaisha and the Nippon Oil Company, and will be two of the largest buildings in Japan. In the construction of these buildings the new Fuller company will use the modern machinery that is now being used in the United States and in Europe. These buildings are to be completed within two years and will do much to relieve the present shortage of office room in Tokyo. Colonel William A. Starrett, vice-president of the Fuller Company of New York and a director of the local Fuller Company, said to a representative of "The Japan Advertiser" that he found conditions in Japan very favorable for the establishment of an American construction company. "The Fuller Company now has a large organization in Japan," he said, "and has incorporated a Japanese company to carry out the two large contracts it has already undertaken, and to seek new business in Japan. We have found the Japanese sympathetic to our project. There has been much speculation as to how the Japanese workmen would take to our American methods. Everything that we can observe indicates that they will easily learn our methods and will quickly adapt themselves. Altogether we view the whole labor situation with confidence. We are in Japan to stay and hope from now on to be identified with the Japanese forward movement in all things industrial. The organization of the Japanese Fuller Company will be augmented by additional principal men as the requirements arise. Further, we are building a large supporting organization in America to attend to the prompt execution of orders for such parts of the buildings as will be purchased in American or European markets."

Big Building Program at Yokohama.—Yokohama is planning an extensive building program for the coming year. According to the plans made public by the mayor of the city, there will be 8 new school houses erected, one library, one municipal isolation hospital, a tubercular hospital and 200 dwellings. In addition to these there will be a new public market. The municipality has appropriated Y.3,000,000 for the carrying out of the program.

New Bridge Needed at Tientsin.—It appears to the "North-China Daily Mail" that the time has come for the Chinese and Foreign Consular authorities of Tientsin to come together and consider the advisability of replacing the present International Bridge by a more modern and convenient structure. The present bridge is entirely inadequate for the work which it is called on to do and at times it is positively dangerous to make a crossing by ricksha owing to the automobile and other traffic which it is required to serve.

MINING

Mining Industry in Chosen (Korea).—The mining industry in Chosen has developed much in recent years. Prior to the war there was little or no transportation of minerals by rail in Chosen, but since 1914 the export of minerals has become so brisk that the total quantity transported amounted to 137,600 tons for last year.

Netherland East Indies Discovery of Copper.—Rich copper deposits have been discovered in South Timor, in the neighborhood of the village of Taninj, about 20 miles distant from Tjamplong. The copper ore is described as worth from 250 to 400 guilders a ton (£25 to £40 at present exchange), and to be the richest copper ore in the world. Tjamplong is connected by a motor road with Koepang, the capital of Dutch Timor, which is about 30 miles away, but a road will have to be continued from Tjamplong to the mines.

Exploitation of Gold in Manchuria.—Two preliminary Agreements between Chinese and British interests for the development of gold-mining properties in Northern Manchuria have recently been concluded. The agreements are now awaiting sanction by the Ministry of Agriculture and Commerce at Peking.

These documents contain further evidence of the present tendency to develop mining properties on a co-operative basis rather than on the concession principle. They also indicate the possibilities of a new mining industry open to British participation in Manchuria.

Both Agreements relate to gold-mining property on the Chinese or right bank of the Amur River,

both within the Homalo district. The Agreements provide for the supply of labor and machinery and for the distribution of the gold on a basis of 50 per cent. to the owner and 50 per cent. to the contractor. The agreements are for five years from the commencement of the operations of each plant to be provided. At the expiration of this period the complete sets of machinery are to be handed back to the owner in good and working condition without any claim for compensation on the part of the contractor.

Mining in Japan.—The yield of minerals in Japan during March was very favorable, according to a report from the Japanese Mining Bureau issued on May 7. Gold, iron, coal, and sulphur registered a more or less tangible gain, only copper, petroleum and silver showing a decline.

The yield of gold in March amounted to 169,590 *momme*, which was an increase of 2.8 per cent. over the corresponding period of last month while silver registered a decline of 3.2 per cent., its yield being 3,590,204 *momme*.

The yield of copper during March fell away by 10.5 per cent. The recent increase in wages and other sundry working expenses caused mine operators in Japan to curtail their production as much as possible with the result that in March a big decrease was registered. The total yield for the month amounted to 9,910,859 *kin*.

Iron is reported officially to have shown a gain of 60.8 per cent., the month's yield being 7,772 metric tons. The yield of petroleum amounted to 155,558 *koku*, being a decrease of 0.8 per cent. compared with the corresponding month of last year.

The yield of coal in March amounted to 2,404,363 metric tons, which was an increase of 0.3 per cent. Sulphur increased by 4.1 per cent. over the corresponding month of last year, the month's yield being 3,531 tons. Evidently, this increase in sulphur was caused by the recent advance in the price in the domestic market.

The result of the mining activities during the first three months of the present year was also as favorable as that for March. Sulphur showed an increase of 14.8 per cent. over the same period of last year, the total yield amounting to 9,923 metric tons. Petroleum also reached 470,845 *koku*, being an increase of 2.9 per cent. over the corresponding months of 1919.

The yield of coal amounted to 6,492,389 metric tons, being an increase of 0.2 per cent. Iron also increased by 10 per cent., its yield being up to 18,827 tons.

Copper registered a decrease of 6 per cent., the total yield being 28,922,693 *kin*. This decrease is largely responsible for the importation of electro copper from the United States which has been increased steadily since last year. The yield of silver amounted to 9,858,187 *momme*, being a decrease of 5.2 per cent. from the corresponding period of last year. The total yield of coal amounted to 501,011 *momme*, being a decrease of 0.1 per cent. from the corresponding period of last year.

New Coal Mining Concern in Japan.—A big coal mining combine capitalized at Y.50,000,000 has been consummated for the purpose of taking over 18 coal mines of Kyushu, the chief coal-producing centre of Japan proper. These mines now produce a total of about 850,000 tons of coal, and the company holds other mineral concessions in Kyushu. The Asia Coal Mining Company represents 2,500,000 shares of stock at Y.20 each, all to be fully paid immediately.

Mining Syndicate for North China.—A mining syndicate has recently been formed in North China with a total capitalization of $10,000,000. The principal shareholders of the syndicate are Tsao Ju-ling, and General Tuan Chi-kuei.

Mindanao Coal Fields.—Mindanao will very soon be supplying a large part of the Philippine Islands' demand for coal. A seam of the best anthracite coal 8 ft. 4-in. thick has been uncovered at the works of the National Coal Company, Malangas, the railroad is nearing completion, and within two months the company will be transporting coal to tidewater at Malangas. The work of developing the coal fields has been primarily hampered by many difficulties, but the outlook now for an early and large supply of coal is most promising. Malangas is on the east side of the Sibuguey peninsula. A town was constructed at Malangas with a waterworks system, wharf, electric light plant, hospital, etc. The wharf has thirty feet of water alongside and the harbor is protected in all weather. A railroad was started to Butong, a camp about twelve kilometers from Malangas. The prospects at Butong are the best yet found in the district. Gotas is four kilometers southwest of Butong. Gotas is the last camp up the Sibuguey river from Payao and it is here that most of the development work has been done. Gotas is about thirty-five kilometers from Payao. The completed project will consist of the wharf, coal bunkers and coal handling equipment, twelve kilometers of railroad to Butong with possible branches to other nearby camps, and the complete mine installation.

The coal at Butong is not fully explored. A seam of first grade anthracite coal 8-ft. 4-in. thick has been discovered at a depth of 43 meters. This is reached by means of a small two-compartment shaft and the miners are now sinking a slope near the shaft for permanent haulage. Diamond drills are now at work to determine the extent of this promising deposit. The outcroppings are found on both sides of a slight elevation 4,000 meters across and about 6,000 wide. If the seam is found to be at all uniform there should be in this deposit alone more than 75,000,000 tons of anthracite.

The chief handicap is the lack of miners. There are very few laborers in the Philippines with any mining experience.

The National Coal Company is also developing the coal fields of Cebu. The work consists of the development of a small coal property leased from the Compostela Coal Company. There is a branch of the Philippine Railway, constructed at the expense of the National Coal Company, leading from Compostela into the hills, a distance of seven kilometers. From the railroad an aerial cable way is being constructed into the mine four kilometres further. There is a very good grade of bituminous coal on the Compostela property. The chief difficulty there also is lack of miners The transportation system will be working by June 1.

Mining Prospects in South China.—A report in the Chinese vernacular press states that the mineral industry experienced a great set back in South China on account of the lack of railway communication with the various mines, and numerous pirates spreading all over the country, both of these hinder the transportation of the mineral products into Canton for exportation. With the exception of gold and silver, which are still unexploited, wolfram, lead, antimony, and manganese have been exploited with a slight degree of profit while the European War was waging, as there was then a great demand for these mineral products to supply the manufacturing of the necessary war materials. During the great upheaval in Europe coal miners even made some profit, as there was a shortage of tonnage for conveying Japanese coals here. Until some years ago native coal alone was used as there was then very little importation of foreign coal, and the coal merchants could enjoy a monopoly in the market. Foreign coal is now but lightly taxed at about 42 cents a ton only, whereas native coal has been taxed by the collector of internal revenue to an almost untolerable degree, the internal tax amounting to $3.00 a ton. Besides this is a drawback in transportation, because of the scarcity of railway and the shallowness of the rivers which delayed the transportation and thereby increased the cost of the coal. It takes but four or five days to bring Japanese coal to Canton, while it takes more than ten days to transport coal from the North River districts. Since the end of the European war nearly 90 per cent. of the coal merchants experienced a great loss.

Talc Deposits in South Manchuria.—There are large deposits of high-grade talc near Tashih Chiao, South Manchuria, China. The crude material can be delivered at the dock ready for shipment, in bulk, at about $7.25 per ton, or in strong sacks at about $9 per ton.

Big Copper Mine Closed in Japan.—A report from Yamaguchi, Japan, states that the Yasaka copper mine in Yamaguchi prefecture has stopped working because the revenue does not suffice to cover working expenses. All the miners have been discharged.

FINANCIAL

Loan for Mongolia.—The frontier defence force in Mongolia has arranged for a loan of Y.5,000,000 with the Yokohama Specie bank, to be secured by taxes from Inner Mongolia.

New Industrial Loan Movement in China.—An Industrial Loan movement has been inaugurated by Paul Myron Linebarger in the American Option Company, which has for its purpose the co-operation of Chinese and Americans for the building of industrial plants.

High Dividends Paid by Japanese Companies.—The Rasa Island Phosphate Company and the Meiji Sugar Manufacturing Company have declared dividends of 200 per cent. per annum. The Meiji Sugar Manufacturing Company has also decided to increase its capital from Y.12,000,000 to Y.30,000,000 by issuing fresh shares.

German Indemnity to China.—It is reported that the total amount to be paid by the German Republic to Chinese merchants and others on commercial agreements, contracts and private debts for sustained losses is about twenty-two million dollars.

New Trust Company in Japan.—The International Trust Company, projected by well-known Japanese financiers connected with the 15th Bank, has decided to complete its organization as a working concern. The payment of a quarter of its authorized capital was completed at the end of April.

Chinese Stamp Tax in Foreign Concessions.—The Diplomatic Body at Peking has agreed with the Government of China that the Chinese Stamp Tax shall be enforced on Chinese residents within the limits of the Foreign Concessions in China and a proclamation has been issued by the Chinese authorities setting forth the original steps taken to enforce this law within the Foreign Concessions and giving a schedule of the duties to be collected.

Bank Amalgamation in Manchuria.—The proposed amalgamation of the Sungari Bank, Harbin, with the Lungkou Bank, Dairen (Mr. H. Hiratsuka, Manager), has been granted by the Kwangtung Government.

Industrial Bank for China.—The entire proceeds that are realized from the sale of the Premium Industrial Bonds issued by the Chinese Ministry of Agriculture and Commerce will be handed over to the Bank for Industrial Development as its capital. A sum of three million dollars is expected to be realized from these Bonds after deducting the necessary expenses.

Loan for Chinese Railway.—The Director-General of the Lunghai Railway has been negotiating for a short-term loan in Belgium, and it appears that the general terms of this loan have been arranged as follow :—(1) The total amount of the loan to be Frs. 25,000,000. (2) The security to be the Lunghai Railway. (3) Interest to be eight per cent. per annum. (4) Period of redemption to be 10 years from the date the agreement is signed. For the first five years, only interest is to be paid. From the sixth to the tenth year, one-fifth of the capital to be repaid in each year. The Chinese Government has authorized the sanction of these terms.

Compulsory Insurance on Chinese Railways.—Under the auspices of the Chinese Ministry of Communications, an insurance system is being started for the officers employed on the different Government Railways.

Japan's National and Domestic Loans.—The Japanese Finance Ministry reports that at the end of April Japan's national loans amounted to Y.2,793,562,000, of which domestic loans amounted to Y.1 482,424,000. During the month, no fluctuation occurred in foreign obligations, but Y.680,000 of domestic obligations was repaid while Y.470,000 was increased. Besides, there was the issue of Extraordinary Exchequer Notes up to Y.484,311,000.

The Hukuang Railway Bonds.—It is understood that Mr. Alfred Sze, the Chinese Minister to Great Britain, has telegraphed to the Government, pointing out that China's failure to honour the Hukuang bonds issued to Germans, would destroy the country's prestige in foreign markets and contending that the interests on the coupons should be paid at all costs. It is contended by officials in Peking that the Peking Government should not pay the interest on these bonds and the fact that such German bonds have changed hands since China declared War on Germany is regarded as an attempt to defeat China's claims in connection with the war. China does not wish to repudiate the bonds but simply to withhold the payment of interest on the coupons held by Germans, when China declared war against the Central Powers. China can never admit the transfer of loan bonds in the hands of the Germans to any foreign party.

Mr. Lamont on China's Resources.—Before his departure from China Mr. Lamont made the following statement :—"In response to repeated requests to express some opinion regarding the situation in China, I can only say that my visit here has been of the greatest possible interest to me and I believe has given me a somewhat clearer understanding of China's problems. Moreover my observations here confirm my belief in the great extent of the underlying strength of China's resources, the integrity and industry of her people and the elements which, in spite of temporary difficulties, make for the nation's future stability and strength. I am returning to America, having accomplished the object of my visit to China, which was to obtain for the proposed new Consortium a more adequate view of the Far Eastern situation. It must be appreciated that my brief visit is but the first step which the international banking groups must take in the way of investigation and planning, if they are to render effective assistance to China in the development of certain of her great public enterprises. The situation here is so complex and important that so far as the banking groups are concerned its study and development must be matters not for a day but for a patient future, which I trust may be marked by cordial co-operation between the Chinese people and the great body of investors of the Western world which the banking groups represent."

China's Financial Situation.—The Chinese Ministry of Finance recently prepared a detailed report on the financial situation of the Government. It says that from the 4th to the 7th Years of the Republic the arrears owing to the various Government Departments were $30,000,000; and in the 7th and the 8th Years the debt owed to the military Departments alone was "ordinary," $17,000,000 and "extraordinary" $30,000,000; to the Administrative Department, $15,000,000; and to the Bank of China and the Bank of Communications $50,000,000, exclusive of the foreign and domestic loans concluded from time to time amounting to more than $130,000,000. Thus the total amount of debts is $270,000,000. The monthly receipts of the Central Government is only $6,000,000, while the expenditure exceeds $16,000,000.

Consortium Loan Plans Agreed On.—An understanding having been reached between Great Britain, France, America and Japan, the Consortium was formally organized on May 4. Viscount Uchida, Minister for Foreign Affairs, reported on the subject at a meeting of the Japanese Cabinet.

The Japanese Foreign Office issued the following statement on May 12 on the subject of the Consortium : Japan's attitude toward the Consortium differs from that of the other Powers because her vital national interests are involved. On account of her contiguity to China, Japan must consider the requirements of her national defence and economic existence in connection with enterprises undertaken on her border. After a frank exchange of views with the United States, British and French Governments for a further, more definite understanding, these Governments expressly declared that they did not contemplate activities inimical to Japan's vital interests and that they were ready to give a general assurance that those interests would be sufficiently safeguarded.

Japan, therefore, decided to confirm the Paris agreement with the result that an understanding was reached between the representatives of the Japanese and American banking groups. A similar understanding is expected to be made soon between the Japanese and British and French groups. With regard to the scope of the activities of the new Consortium, it is agreed that it will make loans to China, but only such as are made direct to the Chinese Government or are guaranteed by the Chinese Government and raised by public issue—these being exclusively reserved to the Consortium. Consequently loans to Chinese capitalists or corporations will be left outside the Consortium's scope.

As the new Consortium has now been called into existence, it is confidently hoped that the peoples of China and Japan will lend support to the present international undertaking. The Consortium agreement was signed on May 11 between a representative of the Japanese bankers and Mr. Lamont. Negotiations with the Chinese Government are expected to open after the formal organization of the Consortium. It is believed that the head office of the Consortium will be established in Peking. Mr. Lamont, in the course of a speech at a dinner given in his honour on May 11 at the Tokio Bankers' Club, emphasized that the Consortium was designed, firstly, to assist China in the development of her great necessary public utilities : secondly, in this way to help to create in China more stable economic conditions and thus make this great country a better field both for domestic and foreign trade and more inviting for private initiative, which all wished to encourage : and, thirdly, to bring about closer relationship among the leading nations of the world, working thus in harmony in a common cause—a relationship that ought to be a considerable factor in keeping secure peace in the Far East and perhaps in the whole world.

Philippine Loan for Irrigation Purposes.—The bill providing for the floating of a bond issue for irrigation purposes has been passed by the legislature of the Philippine Islands. The amount of the bond issue will be determined by the congress of the United States, but the insular government hopes that congress will permit an issue of P.60,000,000, to carry out a program extending over ten years, during which time it is proposed to bring 300,000 hectares of land under a permanent system of irrigation. The bonds will bear interest at 3½ per cent. and are exempt from local taxation.

Vanderlip Mission in Japan.—A distinguished mission arrived in Yokohama on April 27 from America on board the N.Y.K. s.s. *Kashima Maru*, headed by Mr. Frank A. Vanderlip, President of the American International Corporation and left on the *Korea Maru* on May 14. The party included such eminent personages as Henry W. Taft, lawyer and brother of ex-President Taft; Dr. Jacob Gould Schurman, former president of Cornell University; Mr. Harry Benedict; Mr. George Eastman, president of the Eastman Kodak Co.; Mr. Lyman Gage, ex Secretary of the Treasury; Mr. Darwin Kingsley, president of tht New York Life Insurance Co.; Mr. Benjamin Strong, banker; Mr. Lewis Clark, banker; Mr. Julian Street, journalist; and Mr. Lyman Bergen Davis, lawyer. The mission has been holding unofficial conferences with prominent Japanese such as Viscount Kaneko, Baron Shibusawa and others on questions concerning American-Japanese relations, and particularly on the immigration question; co-operation of Japan and the United States in the development of China's industry and commerce, and the joint investment of capital in Japan; the Shantung question; Siberia; Korea and the matter of improved submarine cable facilities between Japan and the United States. The proceedings of the conference were wholly unofficial, informal, and confidential. It is reported that the conferences came to a close with an exchange of notes mutually pledging maintenance of the traditional friendship between America and Japan and co-operation for the development of Pacific trade and other activities.

Siam's Currency.—At the end of March the value of the Siam Government Currency Notes in circulation was Ticals 108,596,694, being Ticals 7,251,810 less than at the end of February. Of the total Ticals 8,609,870 was retained in silver at the head office, and the balance was invested. At the end of July last the circulation reached a maximum of Ticals 143,518,071, so that there has now been a reduction of close on Ticals 35 millions, while at the same time there has been a slight increase in the coin reserve. None of the Gold Standard Reserve Fund is now held in sterling.

MISCELLANEOUS

Mongolian Development—Baron Okura's Enterprise.—Baron Okura Kihachiro has made a proposal to form a company, known as the Hsing Fah Company, for the development of waste land in East

Mongolia in conjunction with the Chinese authorities in Fengtien. According to the Memorandum of Association the capital of the company shall be six million yen, to be equally subscribed by the promoters.

The commercial object of the company is that of developing waste land in East Mongolia. A head office shall be established at Mukden with branches to be opened where and when deemed necessary. As regards exclusively the staff of engineers and experts only Japanese shall be employed.

The above regulations shall remain in force for a period of thirty years, during which the company shall abide by all the regulations governing Chinese companies, and it shall also act upon any orders issued by the Government. The above proposal shall only come into force after it has received the approval of the Chinese Government.

Japan's Trade with China.—According to the "Japan Times and Mail" the trade situation between Japan and China has been restored almost to normal although transactions in a few lines are still at a standstill. Despite the gradual increase of exports, the value of trade, both in exports, and in imports, still does not come to the total of former days owing to the advance of silver quotations, according to the Finance Department authorities, who, however, take very optimistic views as to the future.

American Legation Changes.—Peking papers state that Dr. Charles D. Tenney, the Chargé d'Affaires of the American Legation at Peking, will retire from the diplomatic service immediately on the arrival of Mr. Charles R. Crane, the new American Minister. With the departure of Mr. Spencer, the first secretary, who has been appointed to Peru, and the retirement of Dr Tenney, the affairs of the U.S. Legation in Peking will be almost entirely in the hands of a new staff. As a diplomatic officer and as an educationalist, Dr. Tenny has rendered great service to his own Government as well as to the Chinese, and his retirement will be regretted by many.

Strength of British Troops in Far East.—The following is the cost of various troops stationed in Far Eastern garrisons, exclusive of Indian or local troops :—

SINGAPORE AND STRAITS SETTLEMENTS.

1 Battalion of Infantry (933 of all ranks)	£182,525
Royal Garrison Artillery (160 of all ranks)	34,472
Royal Engineers (20 of all ranks)	5,007
Other Corps and Departments (36 of all ranks)	20,686
	£242,690

HONGKONG.

1 Battalion of Infantry (933 of all ranks)	£182,496
Royal Garrison Artillery (211 of all ranks)	45,343
Royal Engineers (42 of all ranks)	10,517
Other Corps and Departments (141 of all ranks)	35,937
	£274,293

NORTH CHINA.

Corps and Departments (37 of all ranks)	£8,723

Details of Colonial troops and Indian troops in the various garrisons are omitted, although approximately known. The above figures are supposed to represent the strength of the British troops on April 1, 1920, and the amount of money taken for them.

Japanese to Organize Mongolian and Manchurian Civilization Association.—Japanese colonists in Manchuria are promoting the organization of a society to be called the Mongolia and Manchuria Civilization Association, the aim of which is stated to be scientific research work in China's northeastern and northwestern territories. The Chinese, however, suspect that the real aims of this association are of a more material character, and the Chinese press calls attention to the fact that the Japanese are devoting much time and money to the exploration of Manchuria and, more especially, Eastern Inner Mongolia. Japanese investigators are to be found everywhere in these territories, learning their language and tabulating their resources, while the Chinese are for the most part entirely ignorant of conditions in their Manchurian and Mongolian territories.

The Rome-Tokyo Flight.—The Italian aviators, Lieutenants Ferarin and Masiero, had reached Seoul, Korea, on their way to Tokyo, when this issue of THE FAR EASTERN REVIEW was going to press. At Shanghai, Peking and other points in North China, the famous birdmen, first to fly to the Far East from Rome, were given an enthusiastic reception. Lieutenant Ferarin reached Shanghai on May 2, coming direct from Foochow. On May 9 he took the air for Tsingtau, landed safely in the former German concession and, after a week's rest and entertainment, continued the journey to Peking. His descent at the capital on May 17 was witnessed by huge crowds and a suitable welcome was tendered to him by leading Chinese and foreigners. On the following day, Lieutenant Masiero joined his compatriot at Peking. Ferarin left the capital on May 23 and Masiero on May 24. The aviation department officials presented the birdmen with silver cups in appreciation of their courage and enterprise.

COMMERCIAL

Some Facts About Chinese Trade.—Chinese imports from Japan increased 714 per cent. between 1904-1919, from the United States 244 per cent., and from England 49 per cent., according to a commercial handbook on China issued by the Bureau of Foreign and Domestic Commerce Department of Commerce, at Washington. In Shantung the trade of Tsingtao has nearly doubled since the Japanese occupied the port. The Japanese administration at Dairen, in Manchuria, has been active in trade promotion, and the commerce there has increased, in eleven years, from $22,000,000 to $198,000,000. The United States has made substantial progress in selling merchandise to China, shipping $117,000,000 worth in the fiscal year 1919 as against $57,000,000 in 1914, just before the beginning of the war. In one notable item, however, a great decrease has occurred; American sales of cotton goods to China have fallen off from nearly $30,000,000 in 1906 to $1,200,000 in 1918. China's foreign trade is five times as great to-day as it was thirty years ago. When the *per capita* foreign trade is equivalent to that of Australasia, the total will be $65,000,000,000 instead of the present $1,200,000,000; it is believed that this figure may eventually be attained because of the country's vast wealth in coal and basic metals, in vegetable, animal products, and the industrious, adaptable character of its population. Taking the single item of coal, it appears that China has enough to supply the world with a billion tons a year for a period of a thousand years. Hundreds of millions of tons of iron ore are available. All the prerequisites of industrial development are present, and even now cotton-mills in Shanghai, Hankow and Tientsin are paying dividends as high as 25 per cent.

Kiakhta a Famous Siberian Tea Depot.—Recent railroad building activities in Siberia have brought the name of the famous old town of Kiakhta into the limelight as a possible important depôt for receiving tea from Hankow in China for the tea drinkers of Moscow. In the days when camel caravans traveled the trial through Kiakhta, this town was the most important way station on the route. In fact the tea trade brought the town into existence. The building of the Trans-Siberian railroad to Vladivostok forced the caravans out of business, and Kiakhta lost its prestige.

Now that a railroad is being built along the ancient camel trail Kiakhta is expected soon to resume its old position as the most important tea depôt between Hankow and Moscow. The town has a promising future, according to a bulletin issued by the National Geographic Society. One rail head has been pushed south from the Siberian border and another line connects Peking to Kalgan, so that there remains only a thousand miles of easy railway building to shorten the tea route from Hankow to the Trans-Siberian at Vehme-Udinsk by one-half and to obviate entirely the need for transporting across salt water the tea to which Kiakhta owes its very being. Just across the boundary line, only a stone's throw away, is the Chinese companion city, Miamachen. Kiakhta and Maimachen face each other across neutral zone only a few feet wide, but they are as different as two such Siamese twins among border cities can well be. Miamachen is Chinese, bare and gray, filled with Oriental figures in the blue gowns of China. Kiakhta is Russian, with churches and great white houses, and its inhabitants wear the familiar blouse and boots of the Russian from Dnieper to the Amur. The twin cities form a station in the long route between the tea-packing establishments of Hankow and the fair at Nijni Novgorod. With the completion of the Trans-Siberian it became a very simple thing to load tea ships at Hankow, in the heart of China, and unload them at Vladivostok, when a direct railway led to the heart of Russia. Then the caravan tea trade, which had reached 50,000,000 pounds a year, began to decline. The long camel trains across the Gobi desert through Yurga, where dwells the Chief Lama of the Mongols, became fewer. The desert journey of a thousand miles, which plodding camels finished in forty days, was supplanted by a water and rail route much longer in distance but shorter in time. Steamers and boxcars formed the last straw which broke the camel's back as a tea carrier. But the tea tasters at the Nijni fair, on the Volga, declared that they could detect the deterioration in quality due to transport over a water route and the connoisseurs of Russia have secured a considerable amount of Hankow tea, much of it compressed into brick form, over the Gobi route. Until the iron horse takes the place of camel caravan or oxcart, there will probably be plenty for the Mongol and Buriat camel drivers to do along the great tea trail. Recently there have been about 100,000 camels used in tea transit alone, but with the breakdown of the Trans-Siberian caravans have been changed from anachronism to necessity, and between one and two million camels are being used in Mongolia, Trans-Baikalia and Manchuria.

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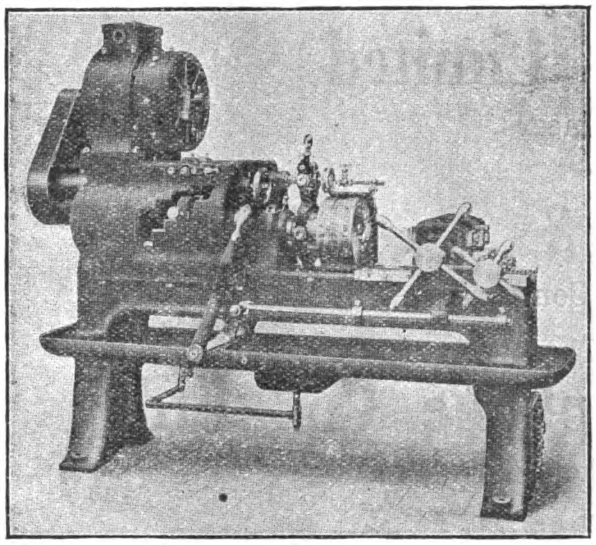

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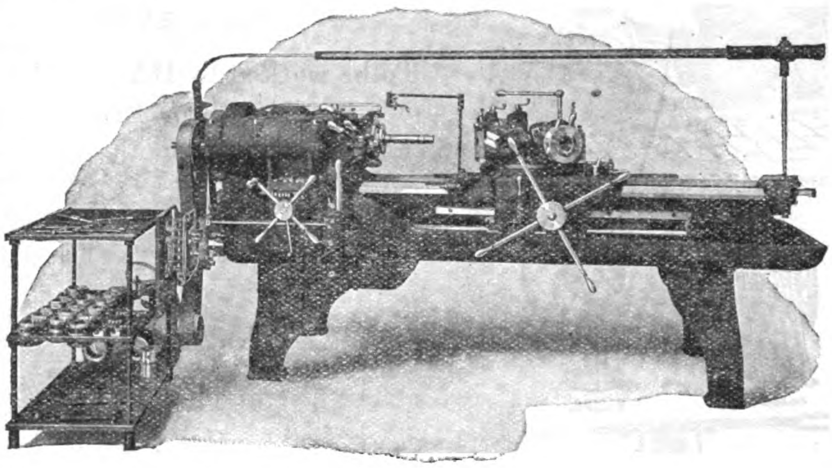

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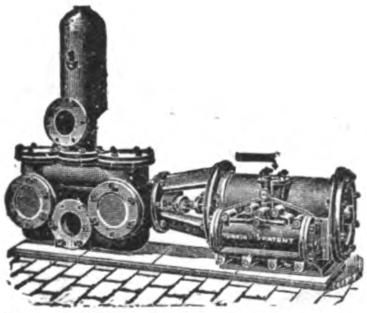

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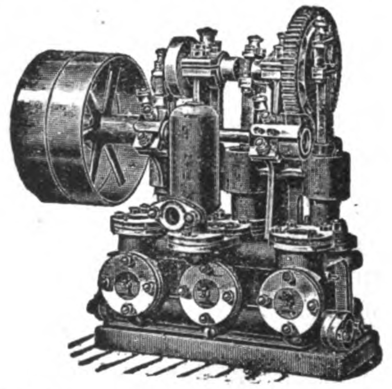

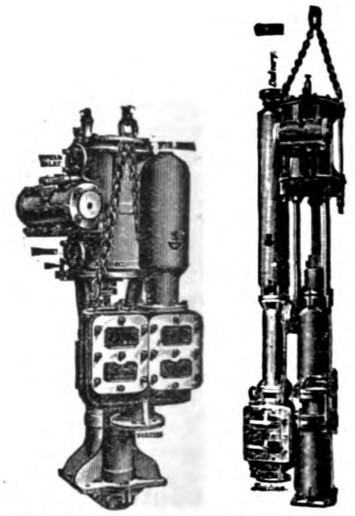

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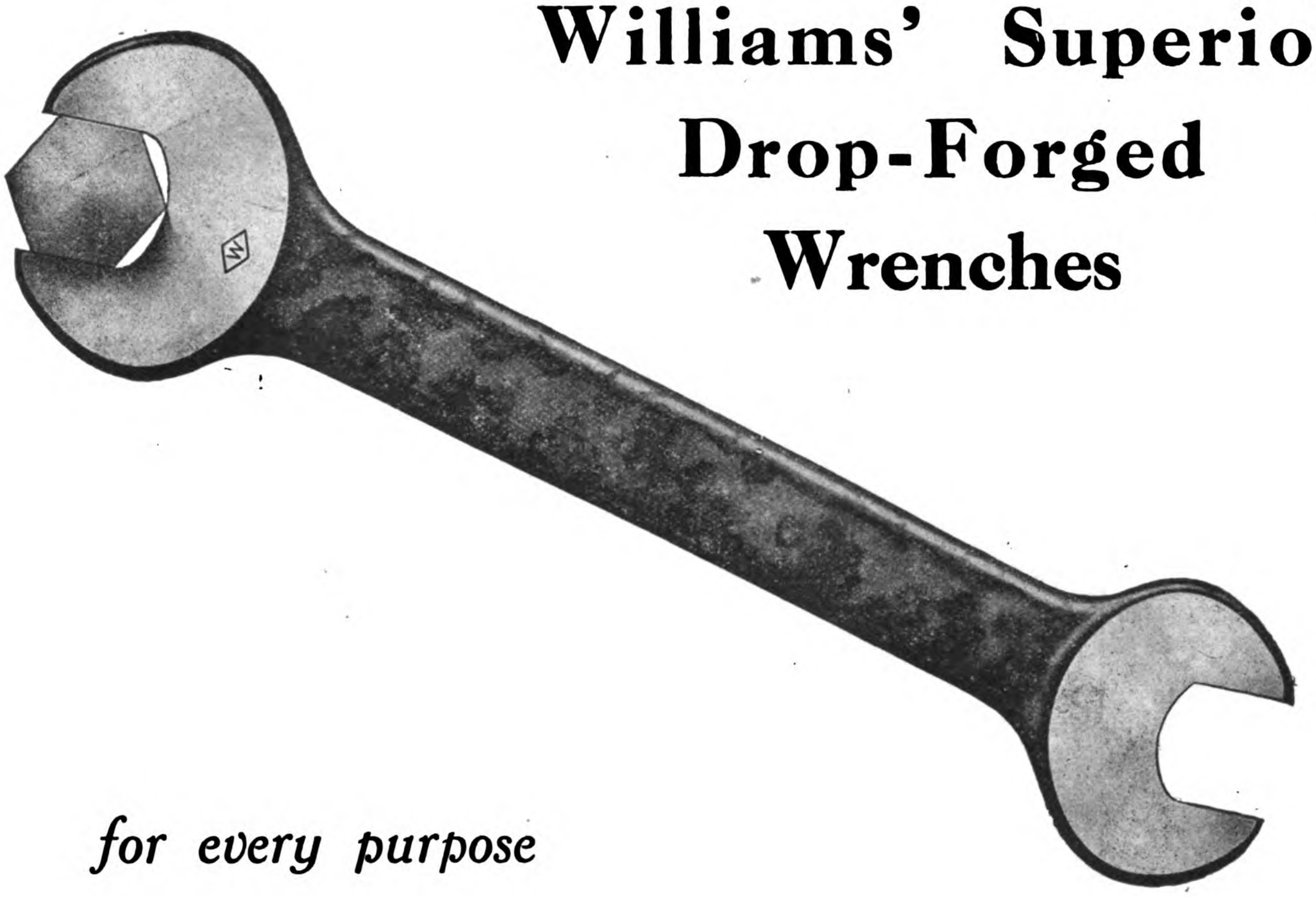

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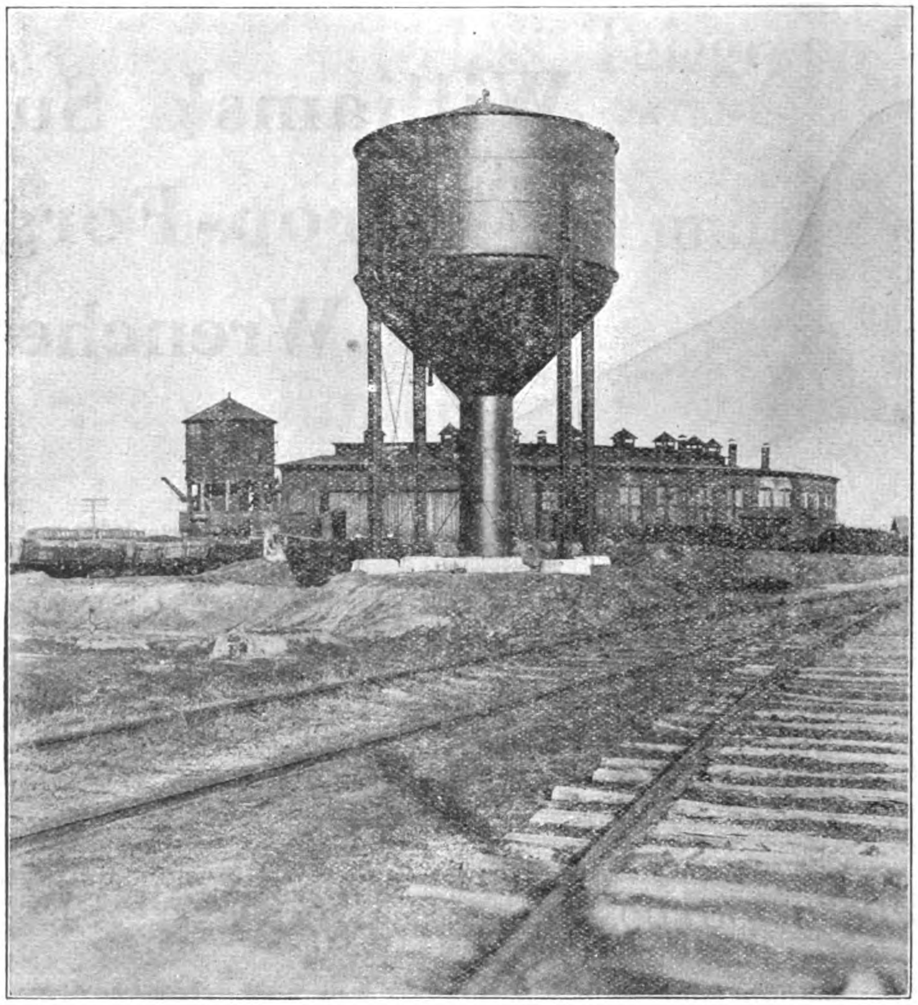

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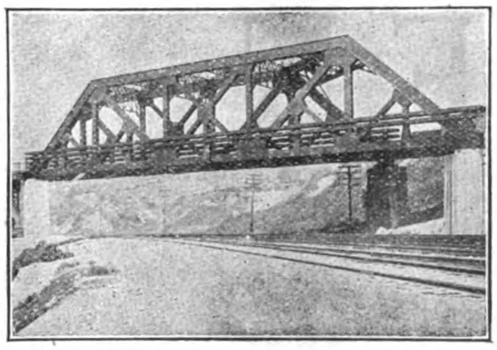

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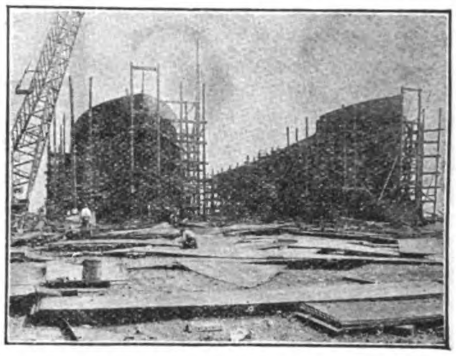

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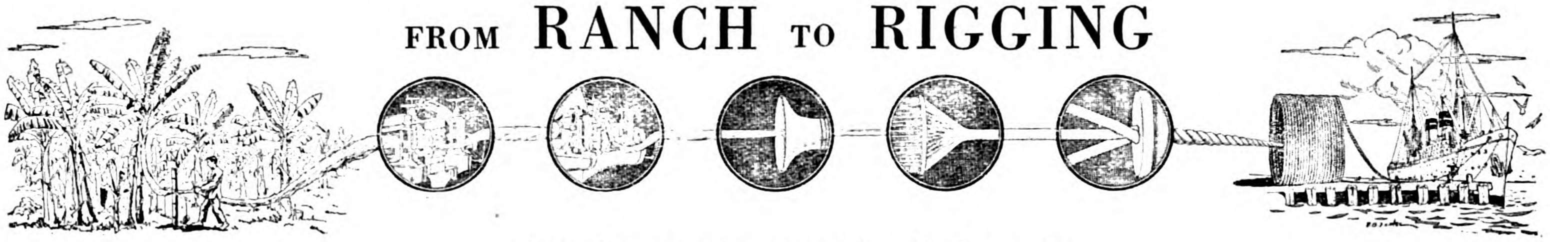

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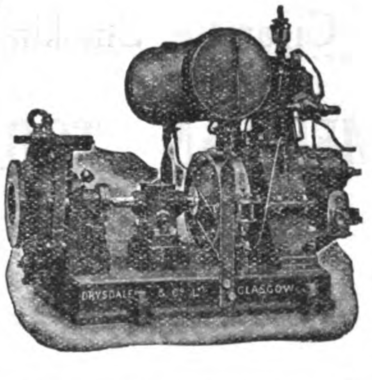

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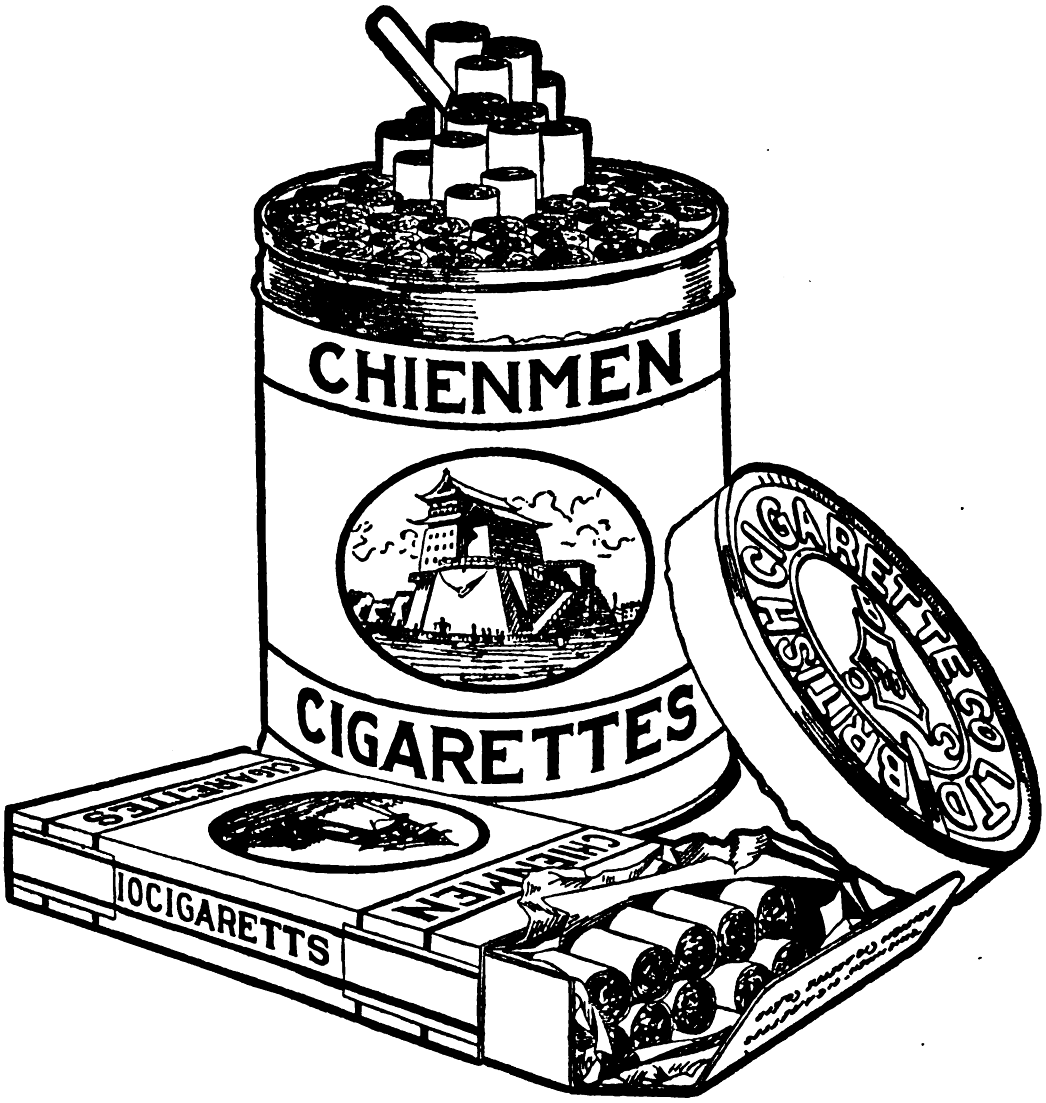

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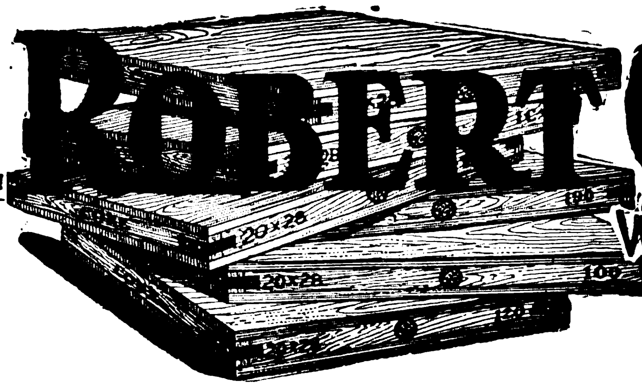

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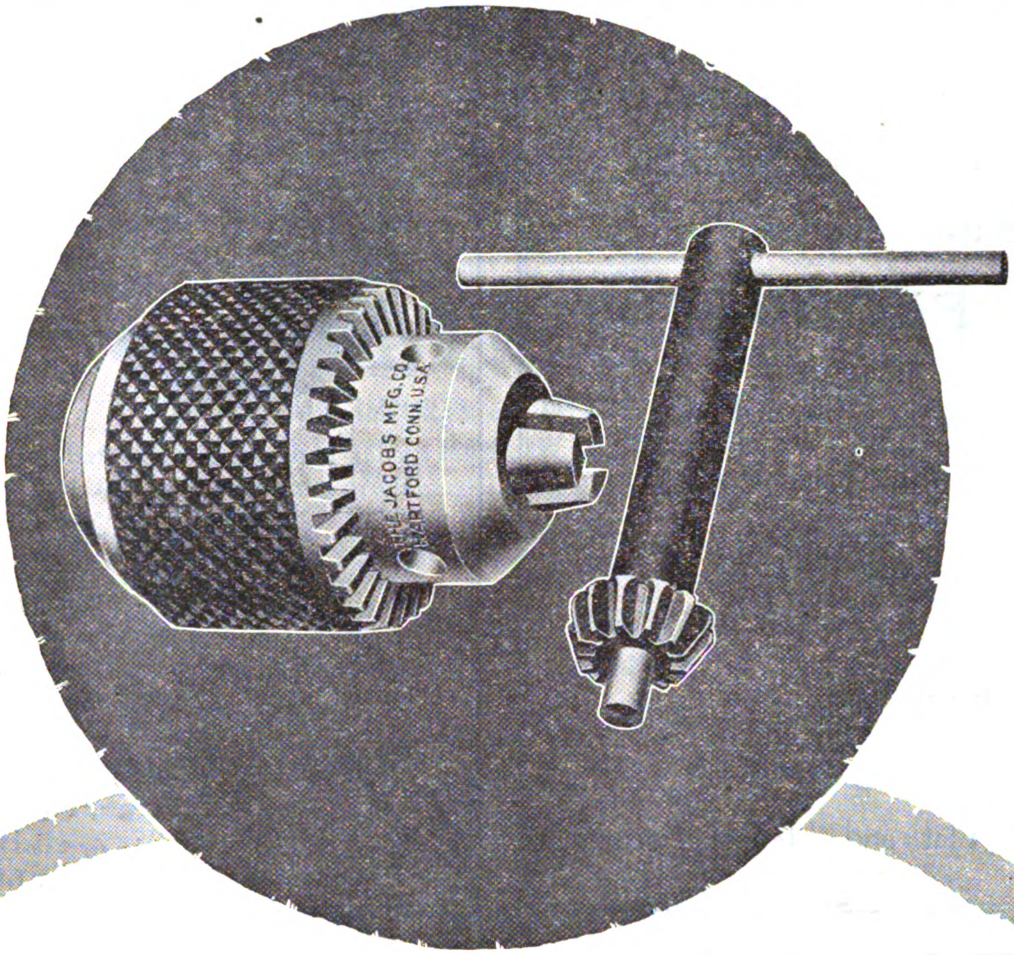

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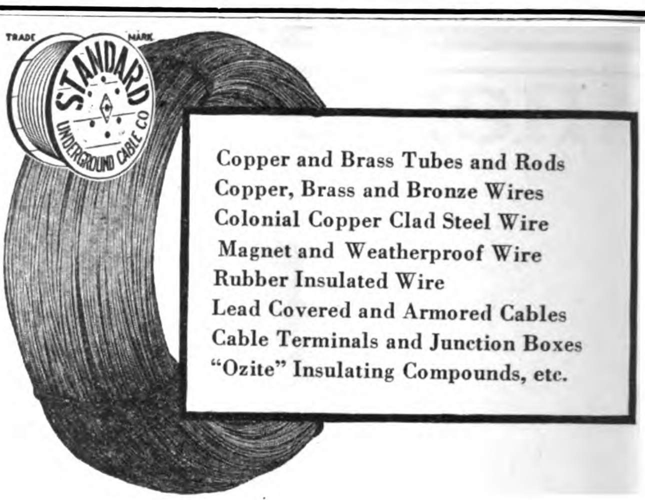

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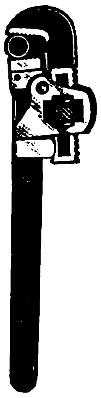

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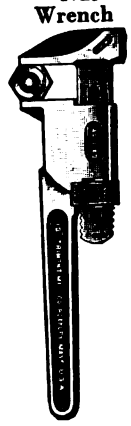

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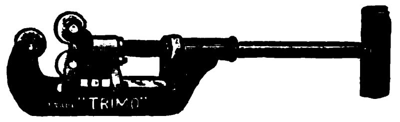

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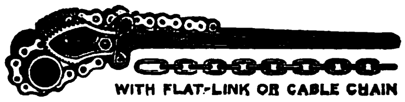

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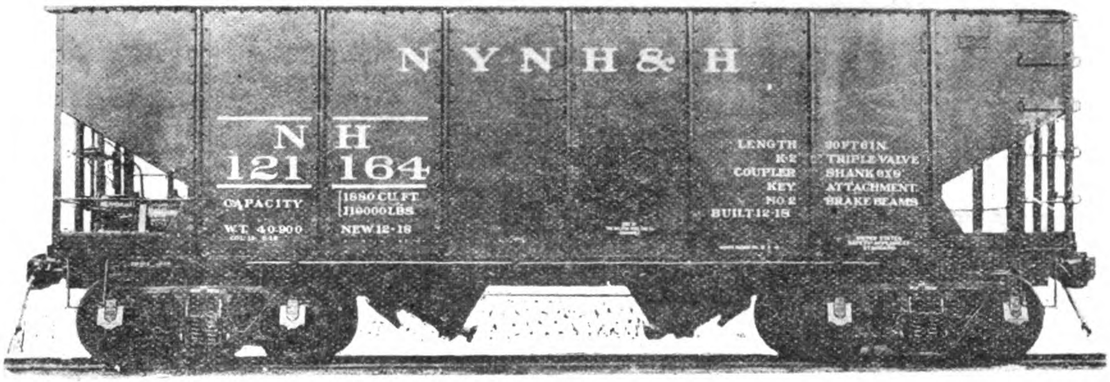

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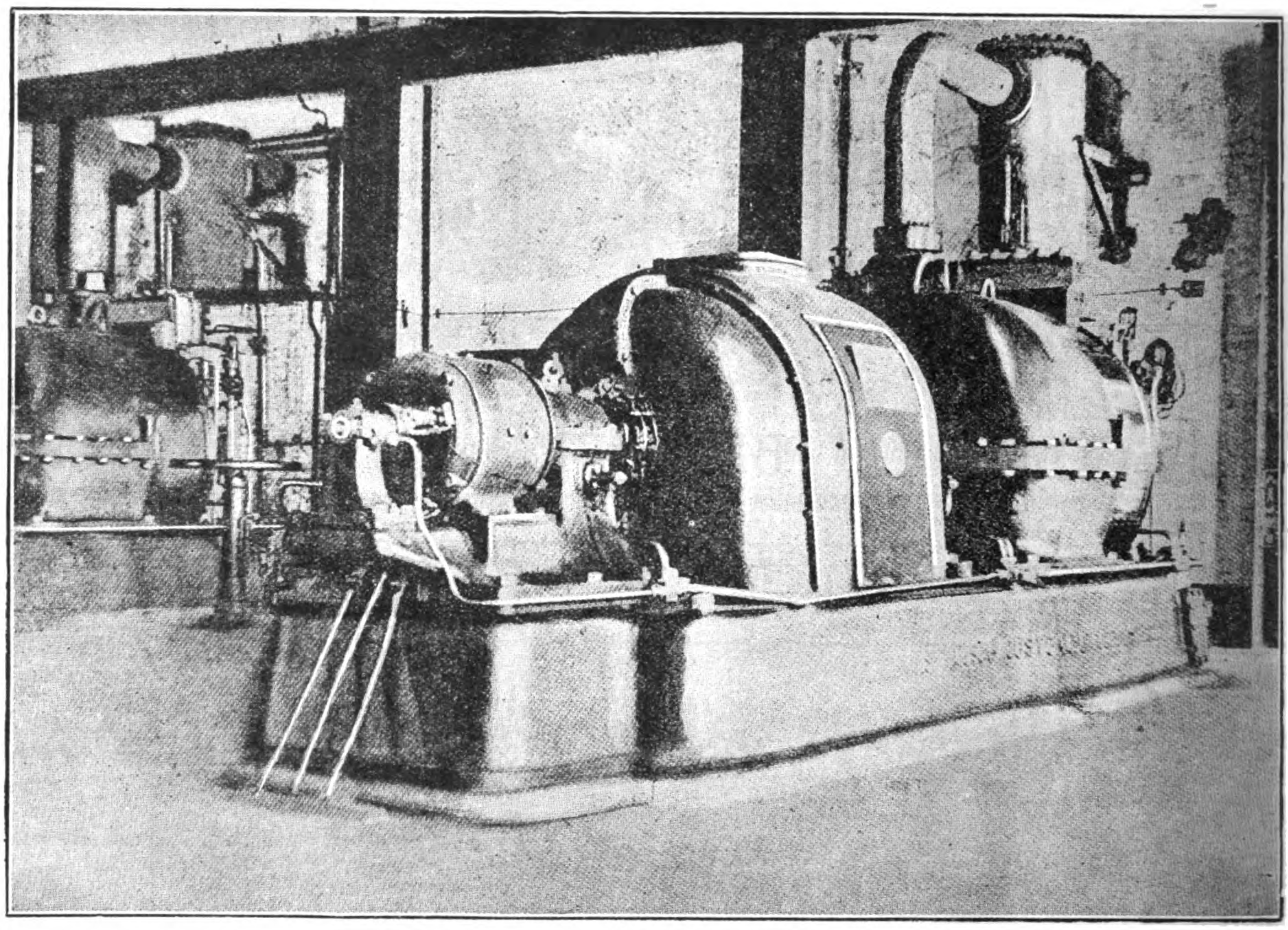

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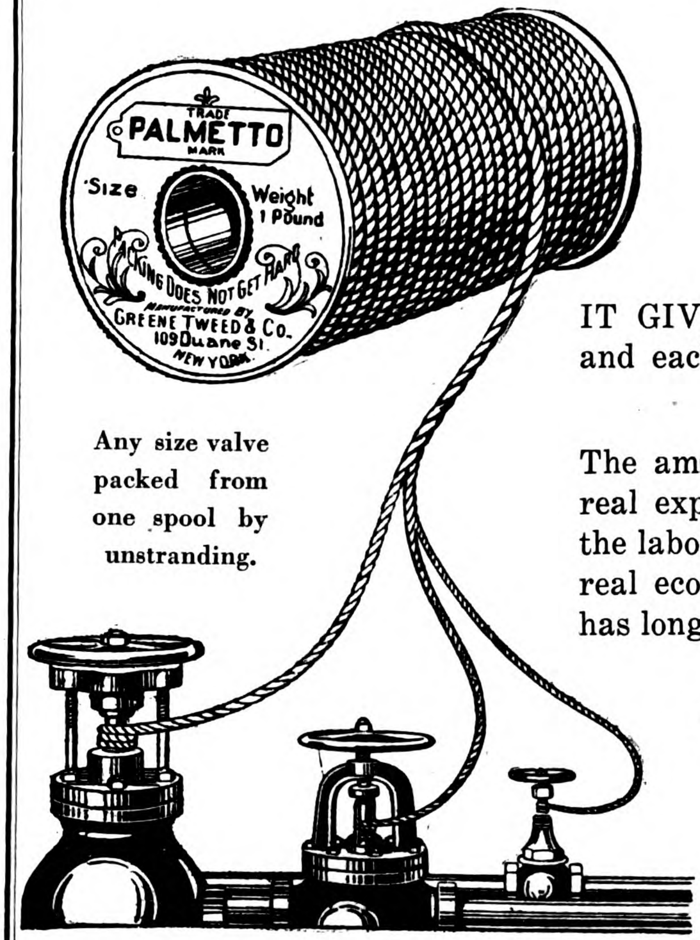

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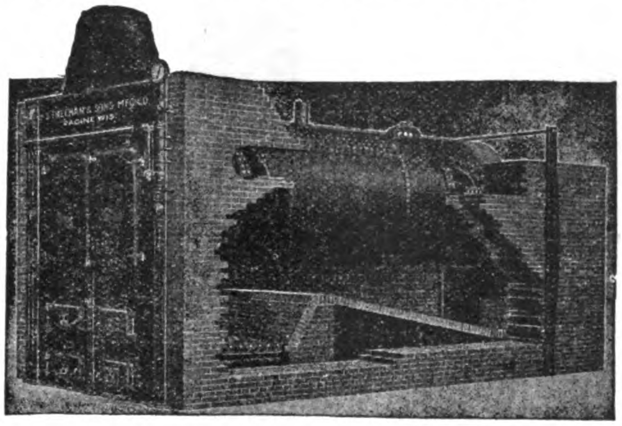

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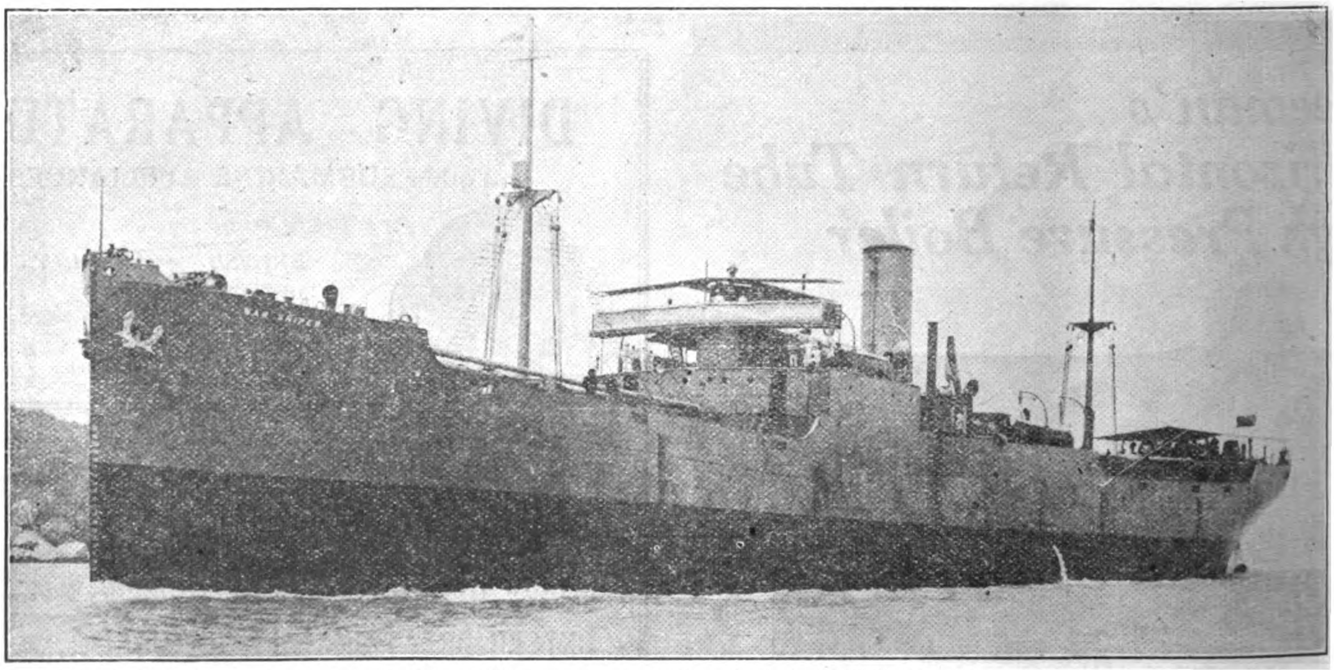

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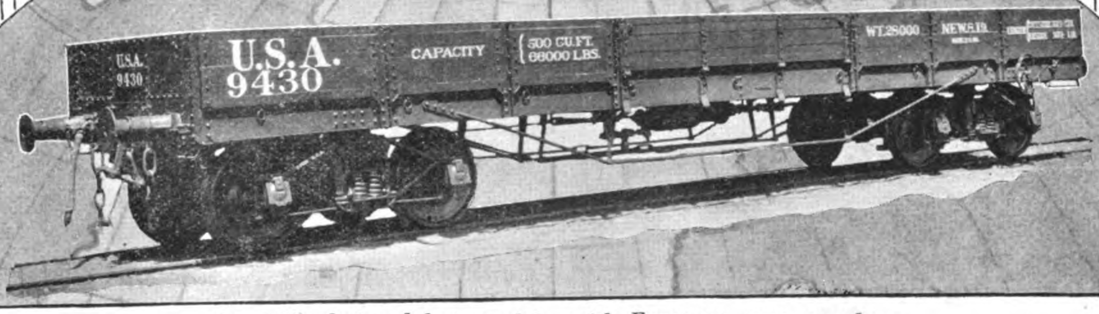

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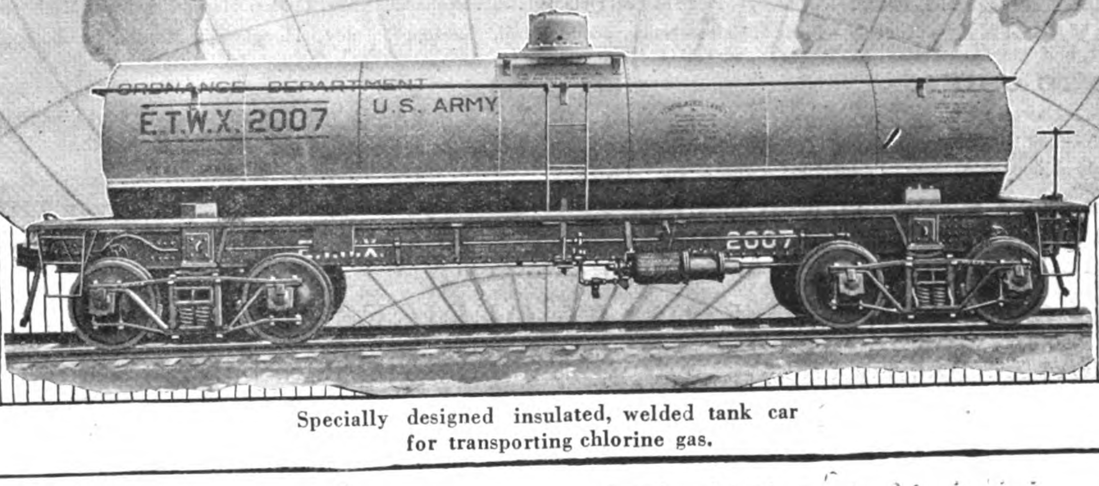

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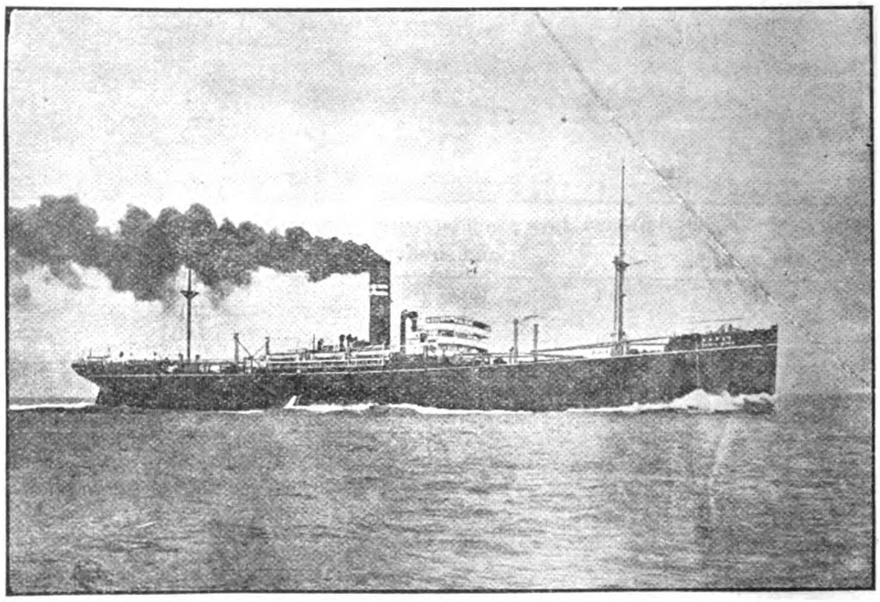

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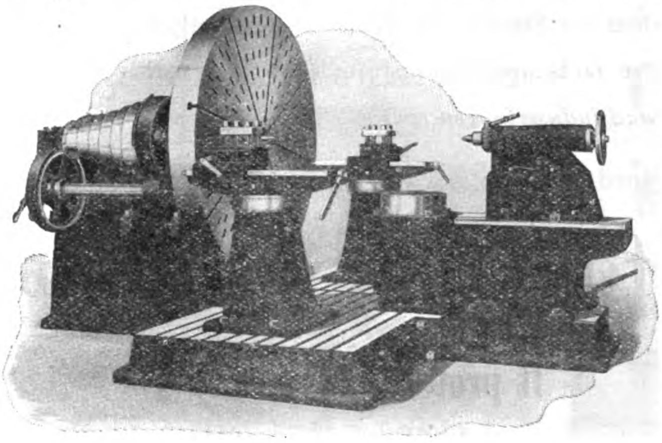

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The Ryerson-CMC Standard Face Plate Lathe is specially designed for turning turbine and generator housings, large pulleys, flywheels, etc. This machine has two tool rests so that two tools may be used, one at the front and one at the back of the machine. Special driving dogs may be attached to the face plate for holding the work to be turned. We build this machine in three sizes, to swing over bed, maximum of 73″, 85″ and 98″.

Ryerson-CMC Extension Bed and Break Lathe

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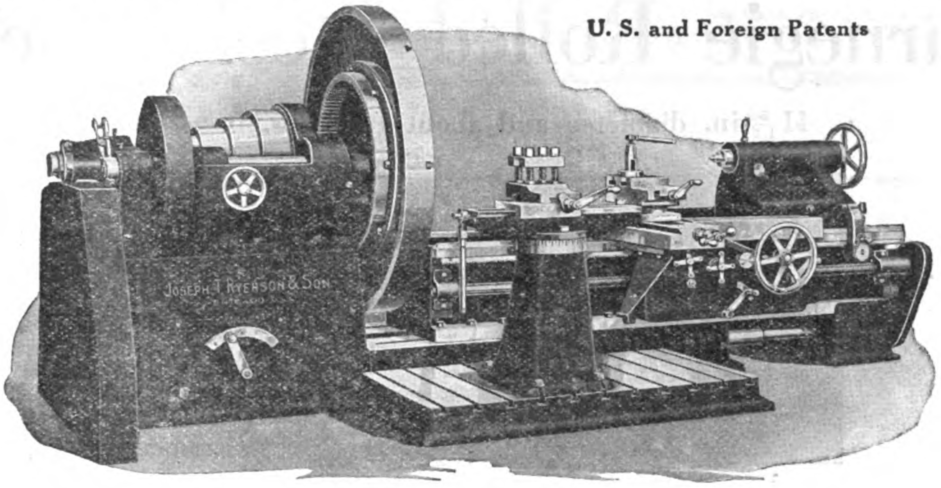

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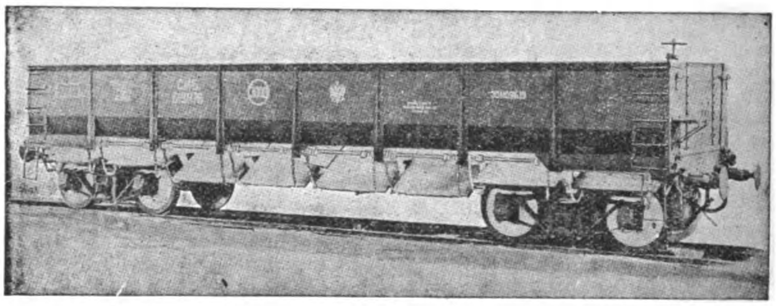

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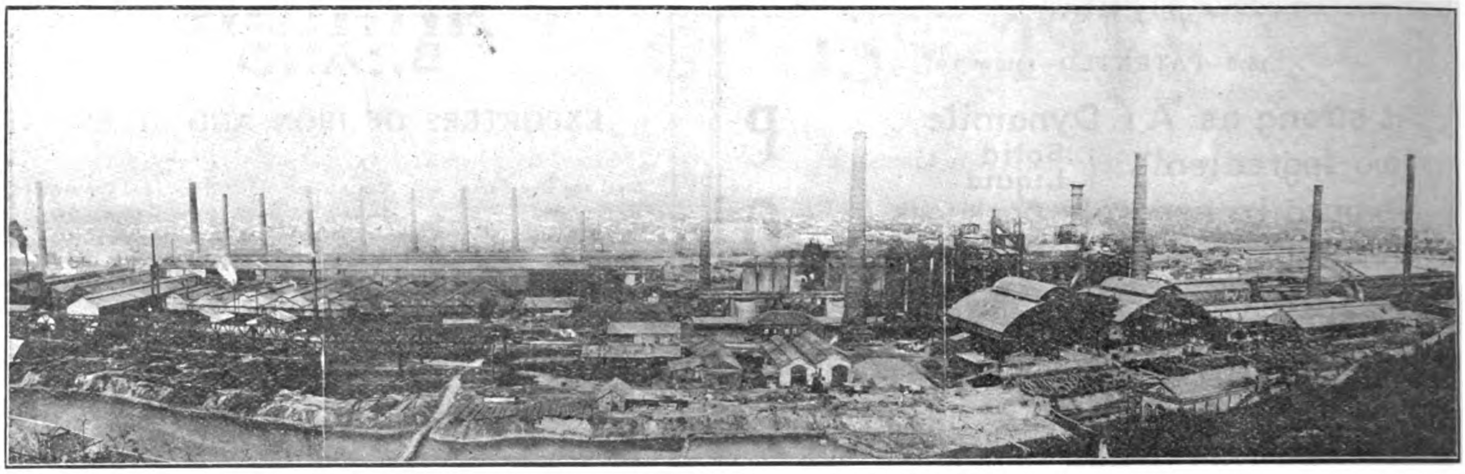

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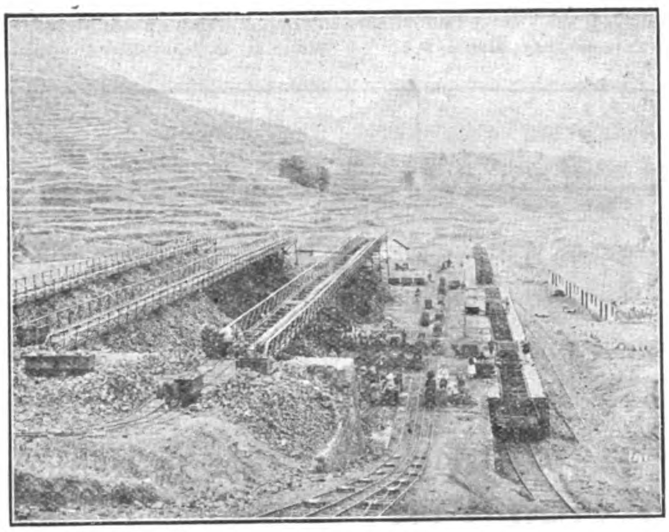

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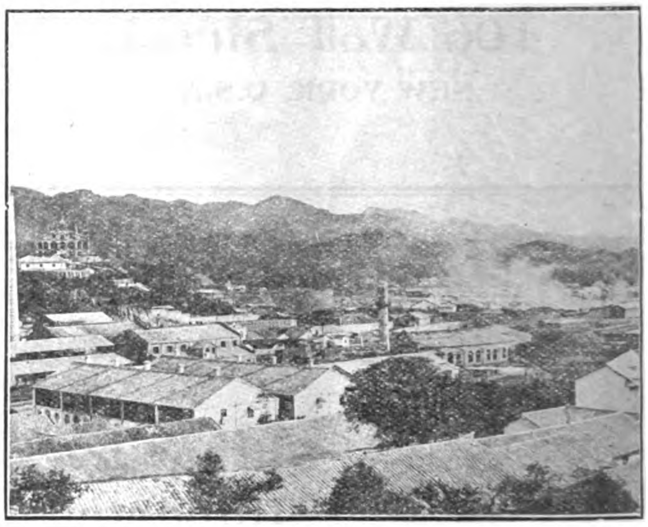

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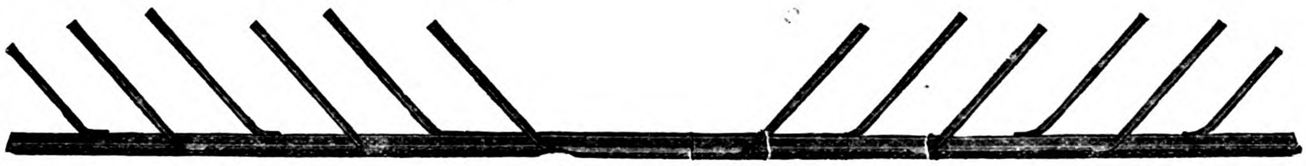

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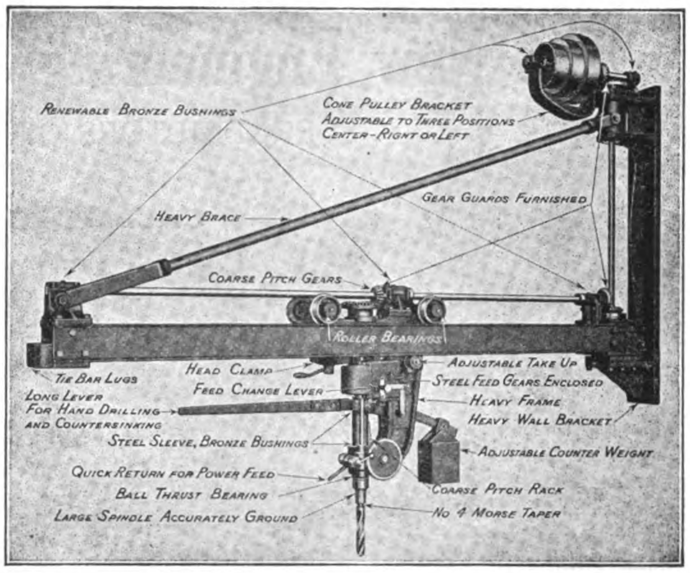

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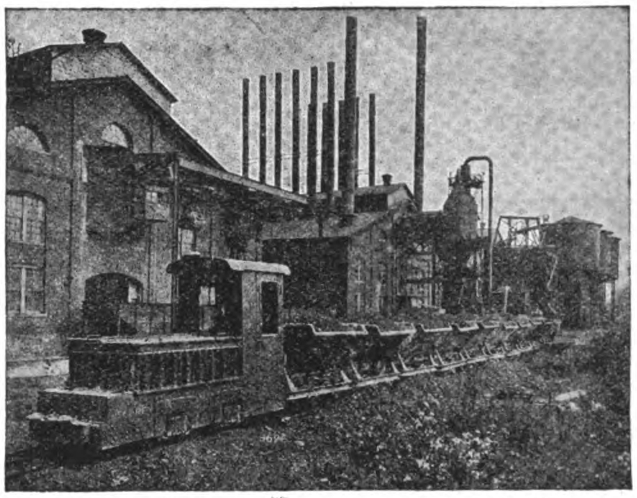

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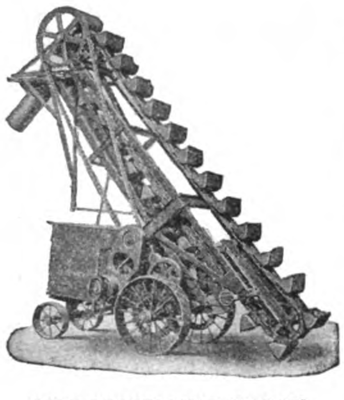

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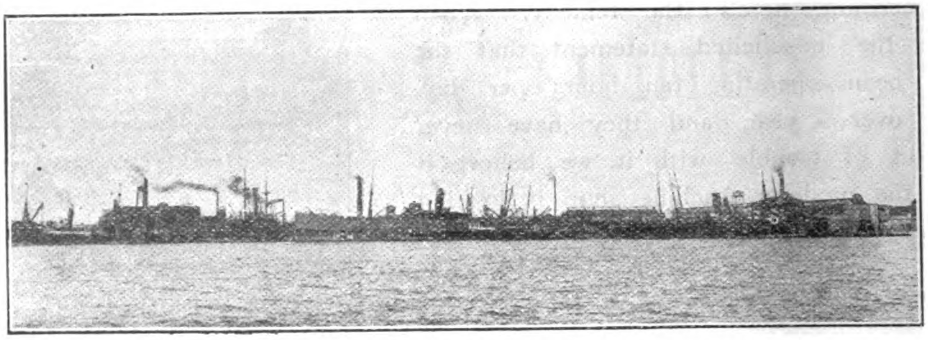

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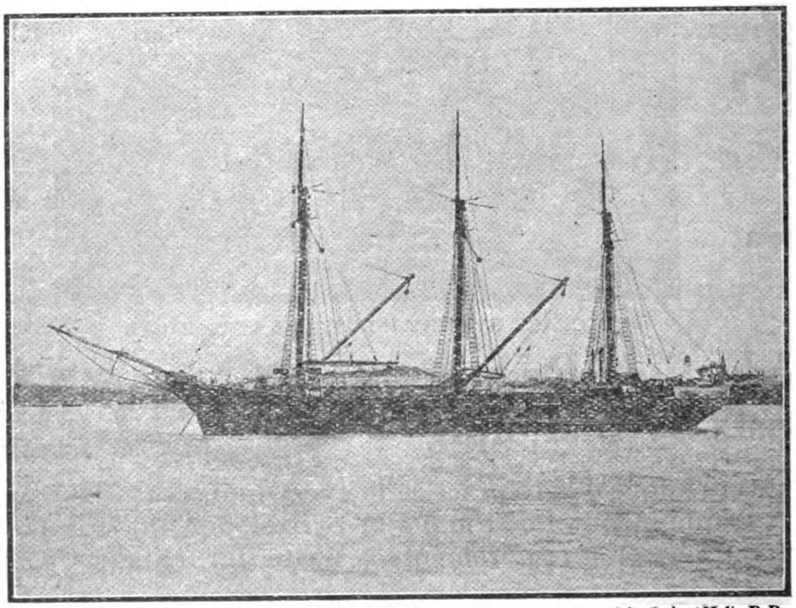
Length on blocks		570 feet
,, overall		577 ,,
Entrance...		70 ,,
Width of sill		60 ,,
Depth to floor		28 ,,
Depth on sill	(H.W.O.S. tides)	21 ,,
Depth on 3 feet blocks	(do)	21 ,,

LARGE PATENT SLIP TO ACCOMMODATE VESSELS UP TO 200 FEET IN LENGTH



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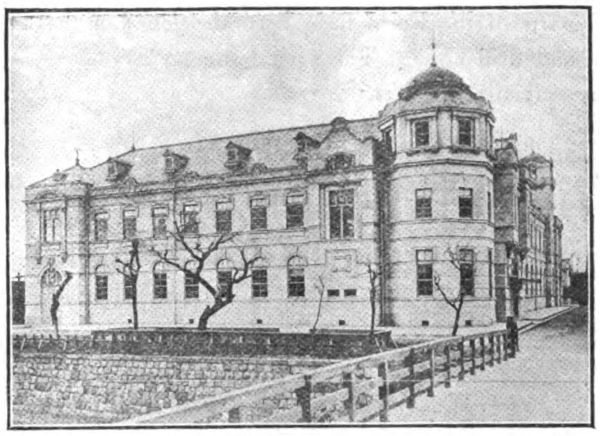

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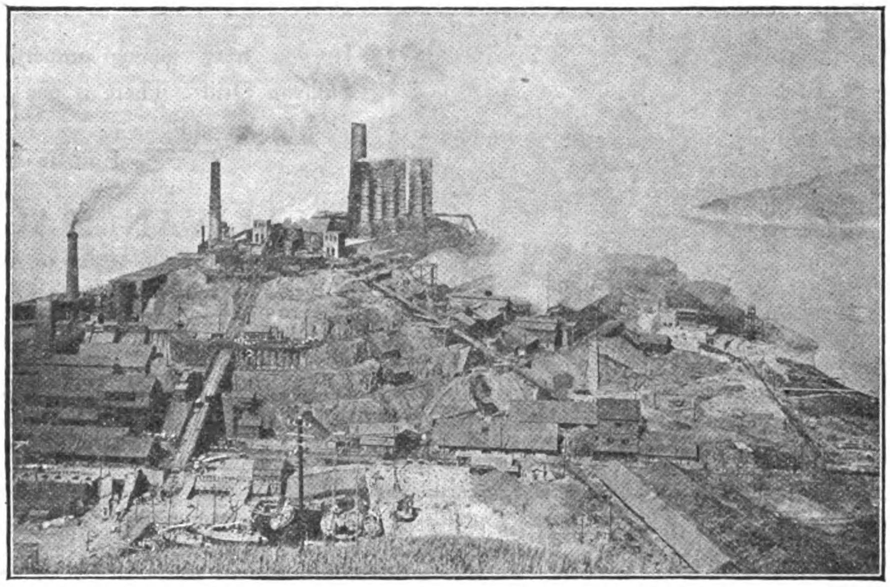

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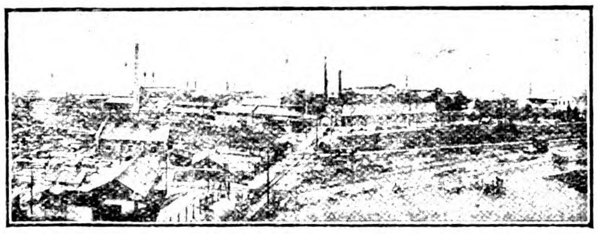

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Established March, 1912

(Successors to the Sumitomo Bank)

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Paid-up Capital	**„ 26,250,000**
Reserve Fund	**„ 4,600,000**

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T. KANOH, Esq. N. YATSUSHIRO, Esq.

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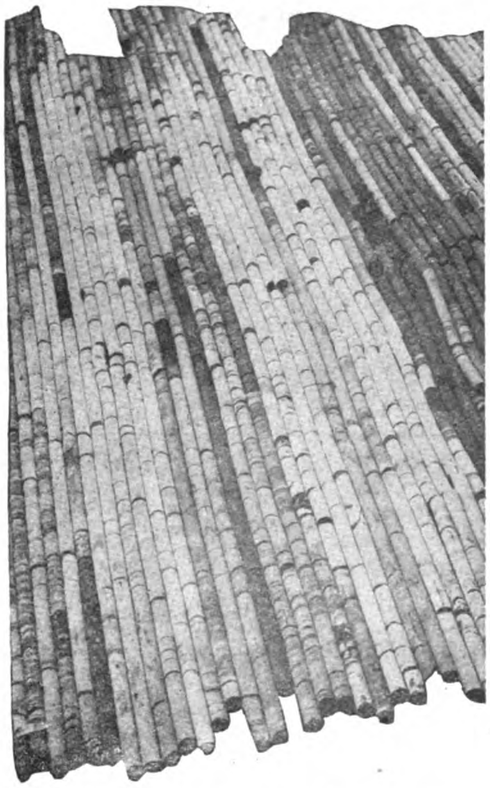

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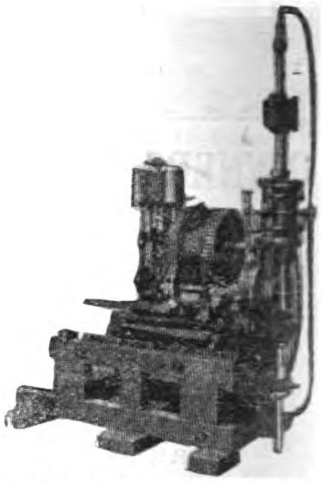

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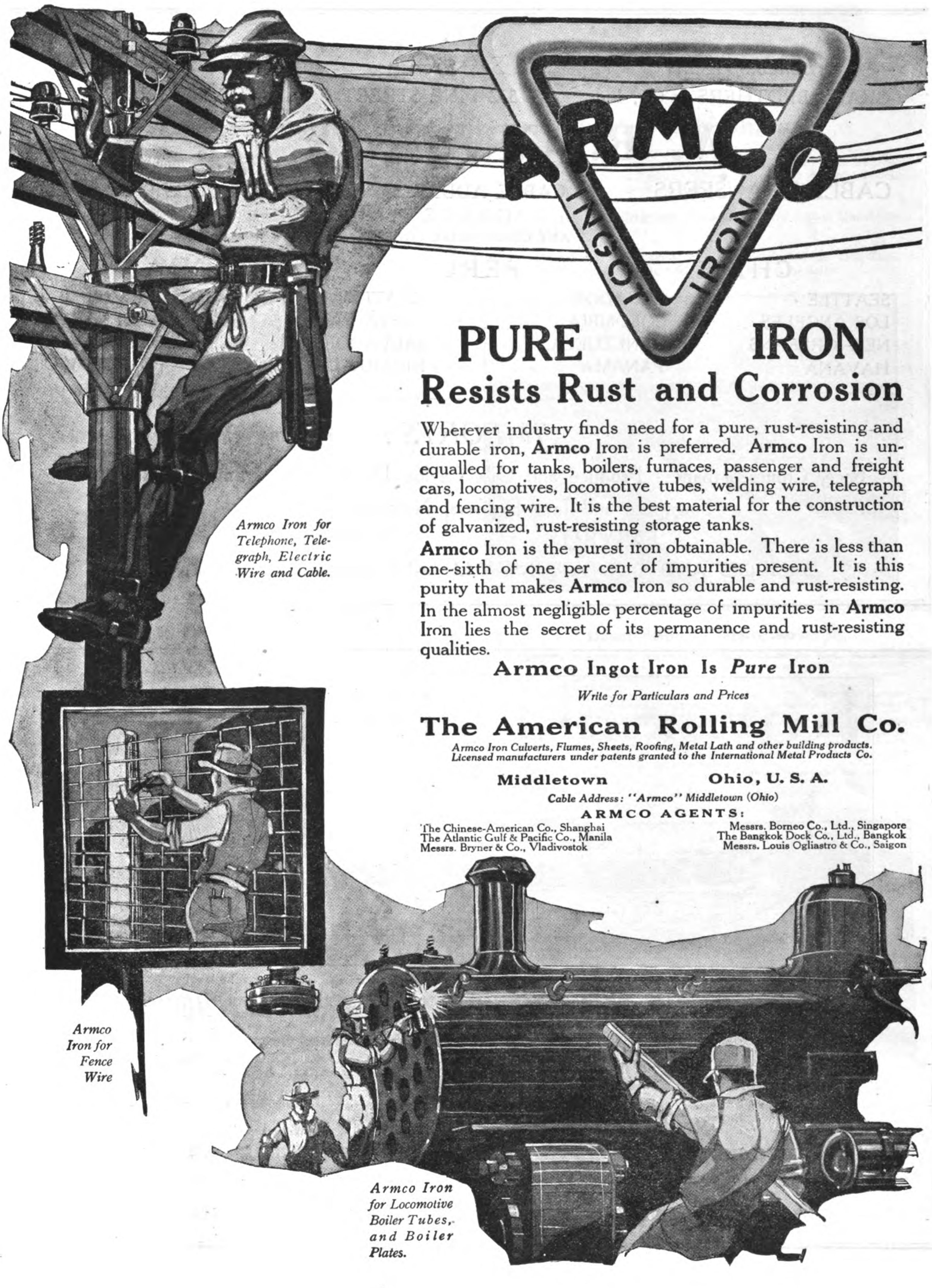
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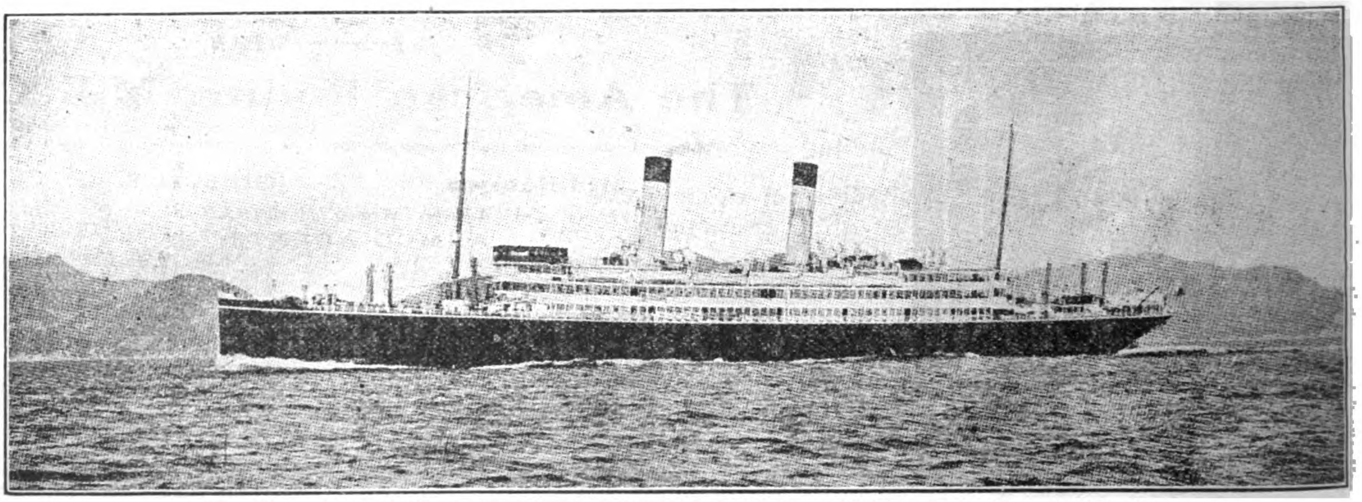

The *Tenyo Maru*, built and engined by the Mitsubishi Zosen Kaisha, Ltd., Nagasaki Works

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	DOCK No. 1	DOCK No. 2	DOCK No. 3
Extreme Length	523 Ft.	371 Ft.	722 Ft.
Length on Blocks	513 ,,	360 ,,	714 ,,
Width of Entrance on Top	88 ,,	66 ,,	99½ ,,
,, ,, ,, ,, Bottom	77 ,,	53 ,,	88½ ,,
Water on Blocks at Spring Tide	26½ ,,	22 ,,	34½ ,,

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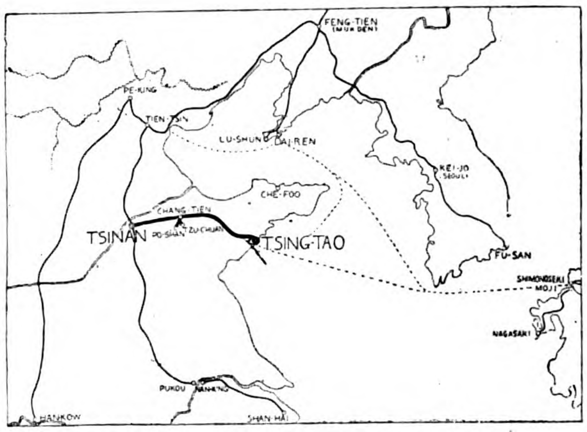


THROUGH TRAFFIC

Through passenger tickets are issued between the following principal stations of the Shantung Railway: Kiaochow, Kaomi, Fangtsu, Weihsien, Chingchow, Changtien, Chowtsun, Tsinan, Tzuchuan, Poshan, and the following points: In Manchuria—Port Arthur, Newchwang, Liaoyang, Fushun, Mukden, Tiehling, Kaiyuan, Changchun, Penchihu, Antung, and Dairen; in Japan—Yokohama, Nagoya, Yokkaichi, Osaka, Kobe, Ujina, Moji, Shimonoseki and Shanghai.

Steamer Connections—Steamers leave the wharves of the Large Harbour, Tsingtao, for Moji and Kobe every five days, for Shanghai about twice a week and for Dairen about three times a week.
For giving facilities to through passengers for Japan, a special train in connection with the night train No. 4 is operated from the Harbour Station to the Wharf, direct alongside the ship, on those days when the liners of the Nippon Yusen Kaisha, Osaka Shosen Kaisha, and Harada S.S. Co. are leaving.
Through passengers and their luggage are carried free of charge for this section.

Collieries—The Tzuchuan (Shisen) and Fangtzu (Boshi) Collieries are managed by the Mining Department of the Shantung Railway. At present the daily output of Tzuchuan coal is about 1,500 tons, far surpassing the amount taken out when the Germans were in control. The coal is well-known for its good quality and fair price.

Tsinan—Tsinan, the capital of Shantung, is the western terminus of the Shantung Railway, and also one of the most important stations on the Tientsin-Pukow Railway.
The Tsinan Railway Hotel, furnished in modern European style, is found on the upper floor of the Tsinan Station, under the control of the Shantung Railway Administration.

THROUGH TRAIN SERVICE

Train No. 1 leaves Tsingtao daily 8.00 a.m. arrives Tsinan 6.30 p.m.
Train No. 3 leaves Tsingtao daily 7.00 p.m. arrives Tsinan 7.00 a.m.
Train No. 2 leaves Tsinan daily 9.00 a.m. arrives Tsingtao 7.30 p.m.
Train No. 4 leaves Tsinan daily 8.30 p.m. arrives Tsingtao 8.30 a.m.

Local Trains run between Tsingtao and Weihsien, Fangtzu and Tsinan, and on the Poshan and Tzuchuan colliery branches.

Fares—Tsingtao-Tsinan—1st class, $14.30 ; 2nd class, $7.20.

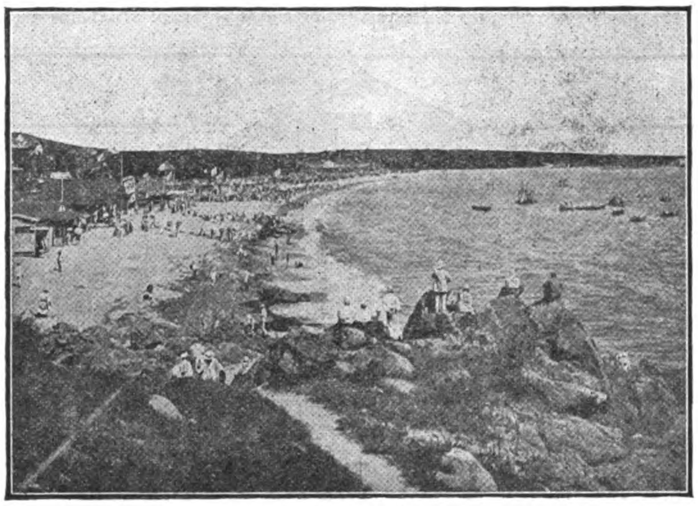
First Class Sleeping Car—A first-class sleeping car is attached to night trains Nos. 3 and 4 running between Tsingtao and Tsinan. For a berth in the sleeping car three yen in silver is charged in addition to the ordinary first-class fare, irrespective of distance.

Dining Car—A dining car is attached to through trains Nos. 1, 2, 3 and 4 running between Tsingtao and Tsinan. Meals are served to order at any time.

Ticket Agencies—The International Sleeping Car and Express Trains Co. and their Agents ; Messrs. Thos. Cook & Son and their branch offices in various parts of the world.

Connections at Tsingtao—By steamer with Japan, Manchuria and Shanghai.

Connections at Tsinan—By Tientsin-Pukow Line with Tientsin, 6.40 a.m. daily, and with Pukow, 8.15 p.m. daily.



BATHING BEACH, TSINGTAO.

Description of Tsingtao

Tsingtao is considered the most healthful place in all the Far East. The scenery including both mountains and sea, is most beautiful. There are quite extensive forest gardens, bits of woodland here and there, and many delightful shady lanes affording most interesting walks through them.

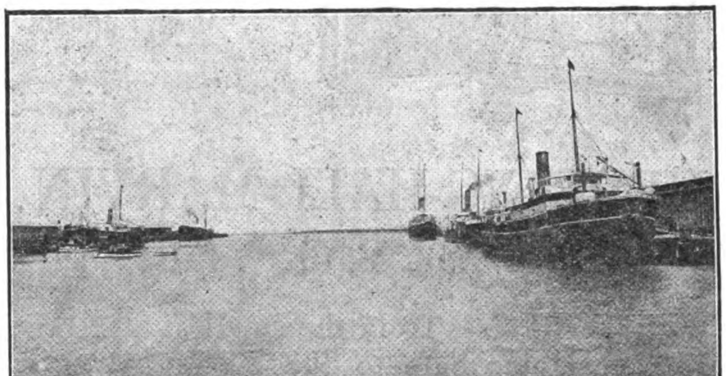
The roads are all broad, with very moderate gradients. They are of both macadamized and asphalt construction for vehicle traffic, while the sidewalks are either paved or concrete. These streets are practically all lined with beautiful shade trees.

The buildings are constructed principally in modern European style, with red tiles and white walls, contrasting pleasantly with the surrounding green mountains and blue sea.

The climate here is fine from Spring to Autumn, being neither too hot nor too cold. These climatic conditions make the place a favourite summer resort for Europeans and Americans from Shanghai, Tientsin, and other places.

The hotels are luxuriously furnished with up-to-date equipment and are under the efficient management of Mr. H. J. Hearne.

The hotel rates are $6.00 and up, per day, on the American plan.



THE GREAT HARBOUR, TSINGTAO

For Further Information, please apply to

THE SHANTUNG RAILWAY ADMINISTRATION, TSINGTAO

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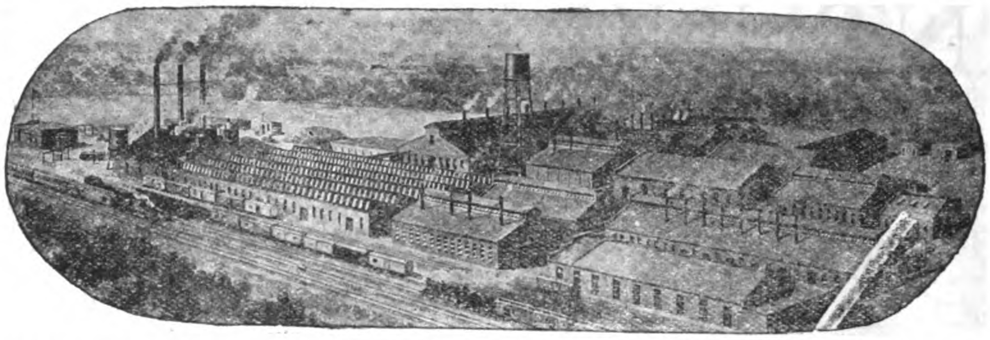

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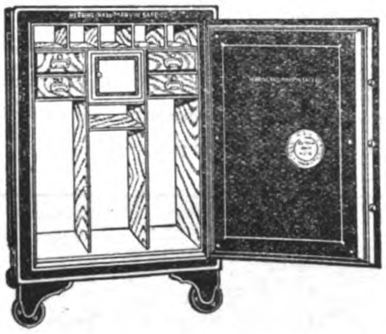

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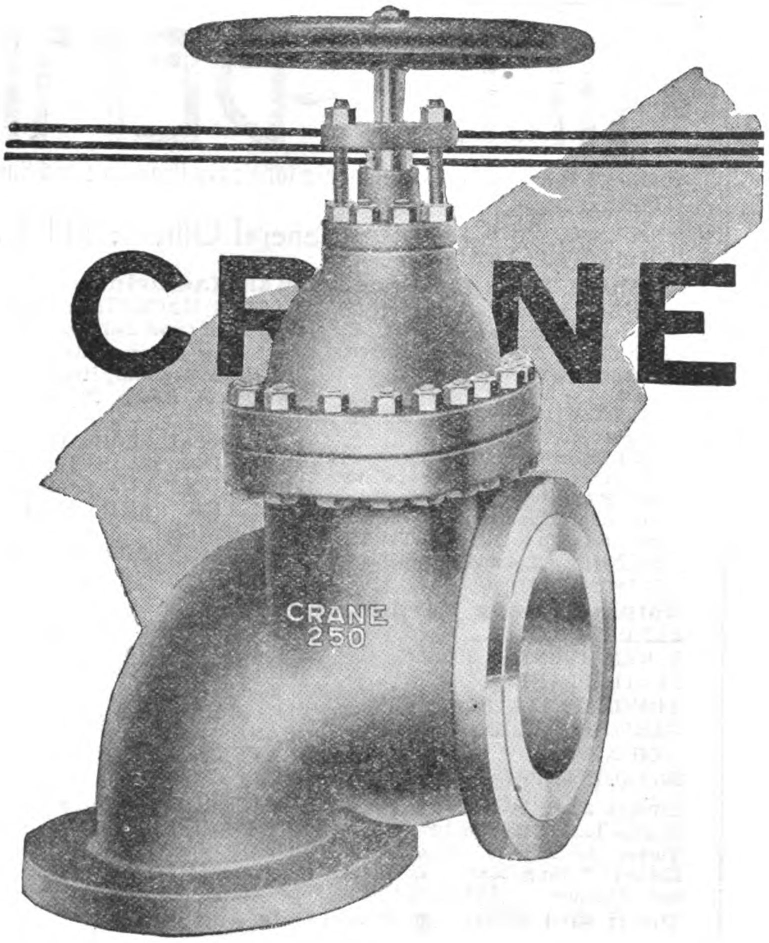

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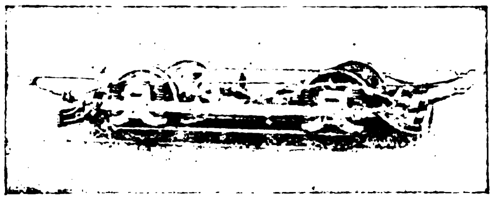
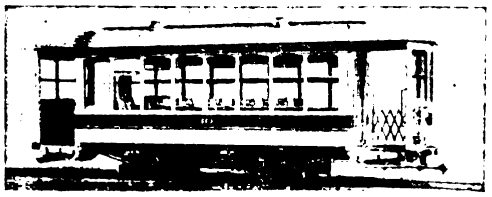


Brill Tramway Truck No. 21-E for short-length cars

Many important developments in design and construction, including the first system of electric tramway trucks, are attributed to its engineers, and the high standard of its products to-day is the result of the long experience and conscientious endeavor on the part of the Brill organization.



Single-Truck Tramway Car mounted on Brill No. 21-E Truck.

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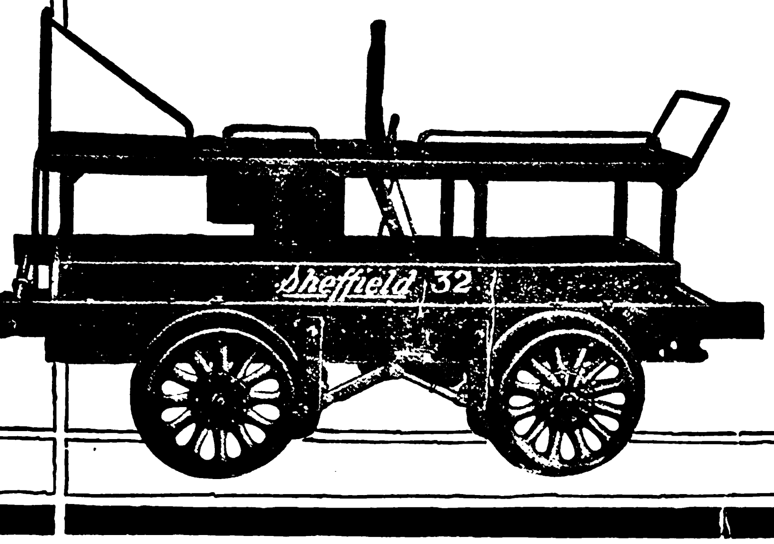

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Framework is entirely of steel of rigid construction, securely supporting the glass and preventing breakage.

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The lamp is very powerful, especially intended for blue printing. Also has automatic cutout, which may be set at any point.

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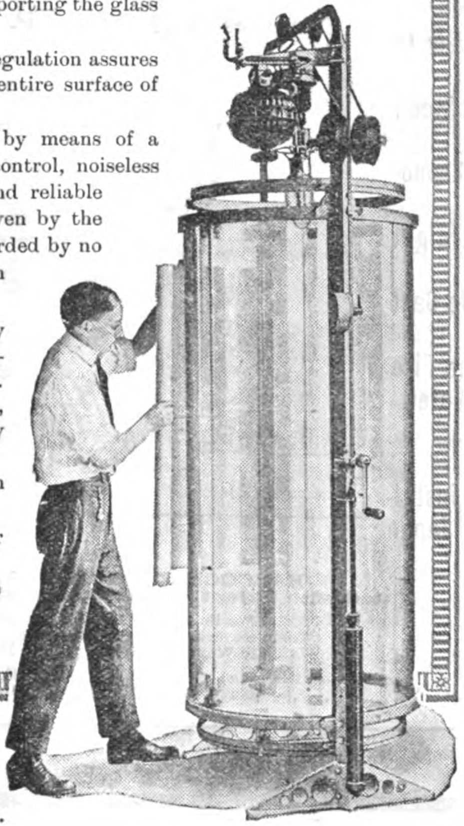

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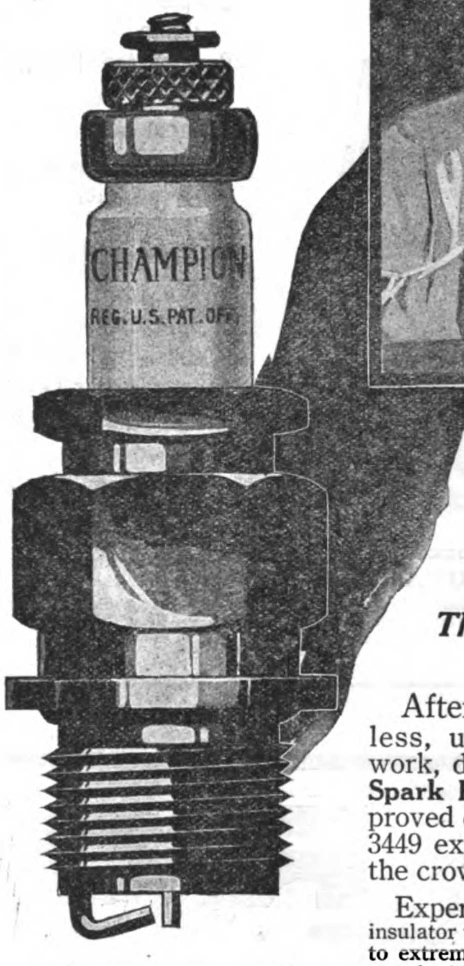

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Dependable Spark Plugs

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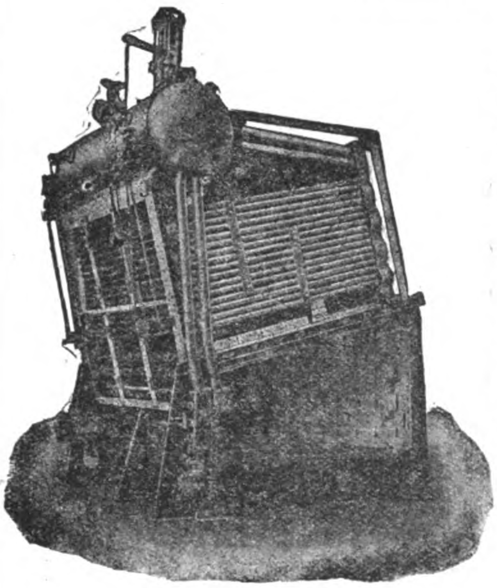
SUITABLE FOR ALL INDUSTRIES, AND FOR BURNING ANY KIND OF FUEL



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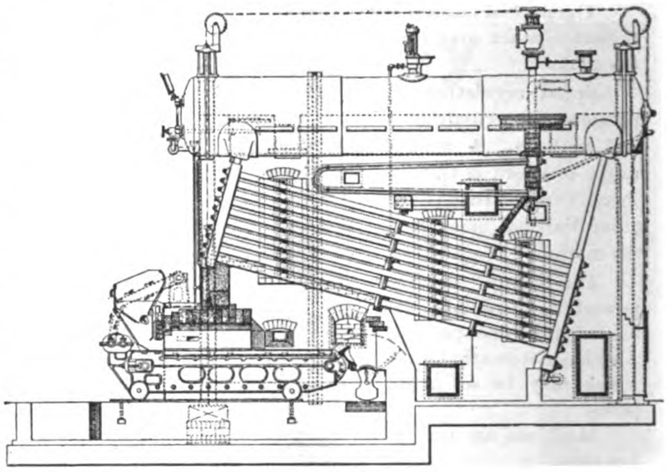

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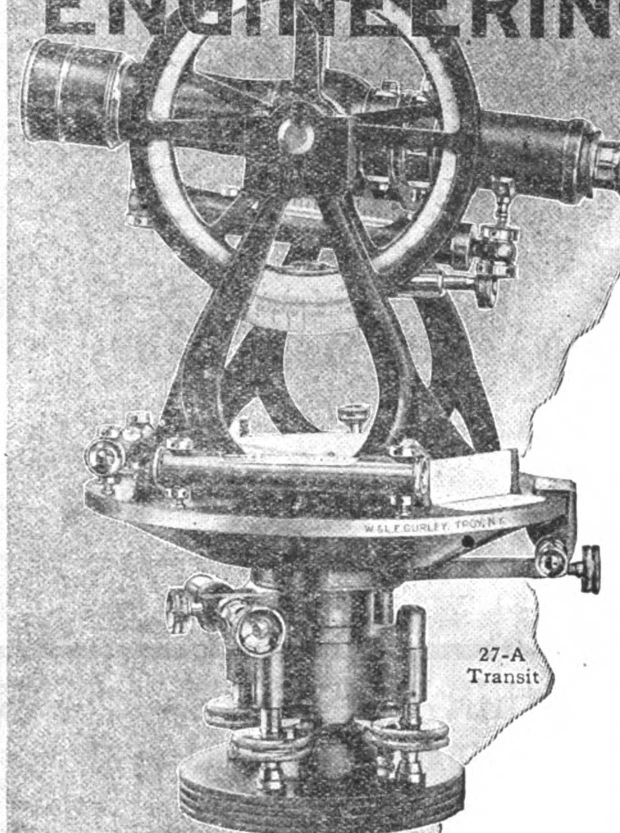

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GURLEY Instruments are closely identified with the development of natural resources in all parts of the world, and have been used in solving the greatest engineering problems for nearly three-quarters of a century. They are the standard equipment of the various departments of the United States Government, of the foremost railroads, mining and industrial concerns, of the leading universities and are extensively used by the Governments of Canada, Mexico, Brazil, Peru, Chile, China, Japan, Australia, India, Egypt and Russia. A partial list of GURLEY Instruments appears on this page.

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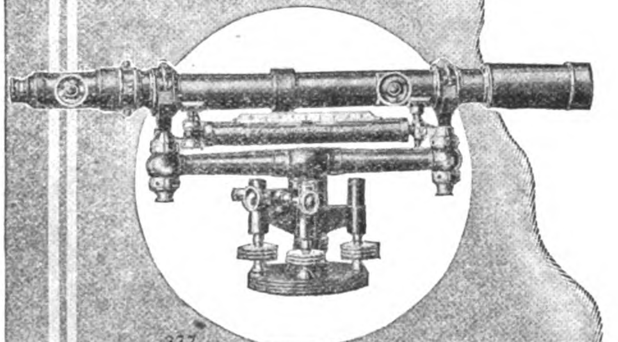
GURLEY Plane Tables and Telescopic Alidades—for topographers, geographers, landscape engineers and geologists.
GURLEY Compasses—for surveyors, mining and military engineers, geologists, foresters, etc.
GURLEY Current Meters—for measuring the velocity or the flow of water.
GURLEY Water Stage Registers, making printed or graphic records—for determining the height or level of water.
GURLEY Leveling and Stadia Rods—graduated in decimal, fractional or metric system.



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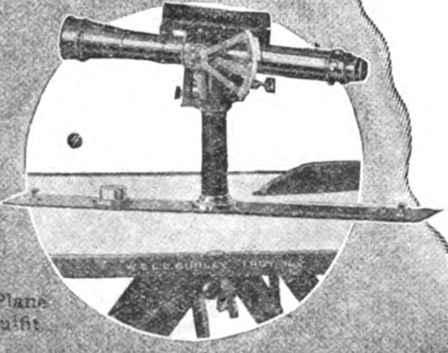
Each instrument is thoroughly tested and adjusted, ready for use, and packed in special waterproof case for export shipment. Write for literature giving specific information, illustrations and specifications.



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Established 1845
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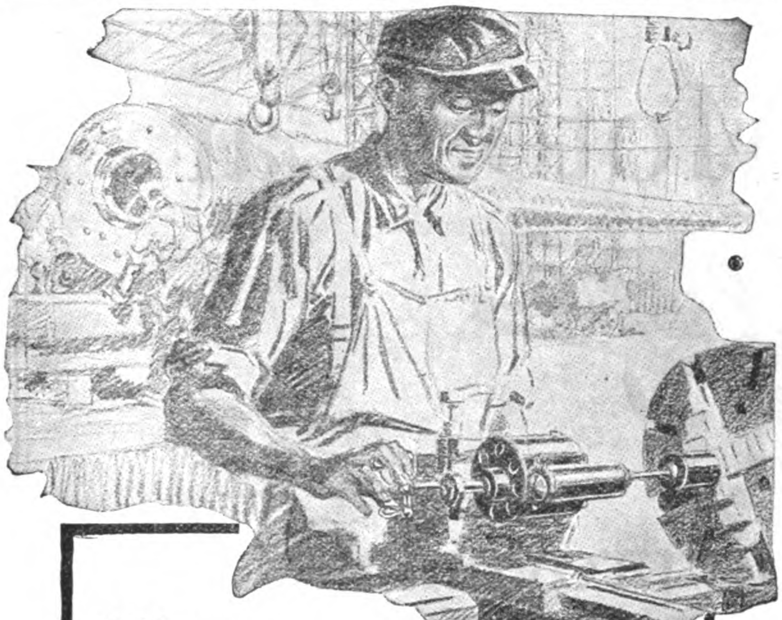

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HIGH SPEED GRINDER

The high speed internal spindle operates at 30,000 RPM. It enables even the smallest wheel to clear itself. Internal work ground with the Dumore will be free from taper or bell mouth. The spindle has a reach of three inches. The motor spindle was a speed of 10,000 RPM.

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Correspondence invited with responsible firms in view of representation.

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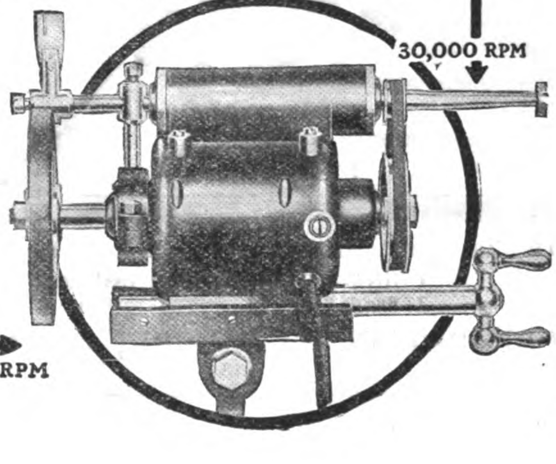

10,000 RPM

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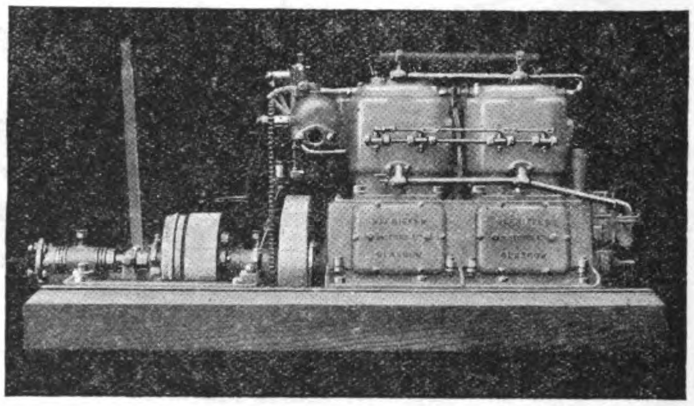

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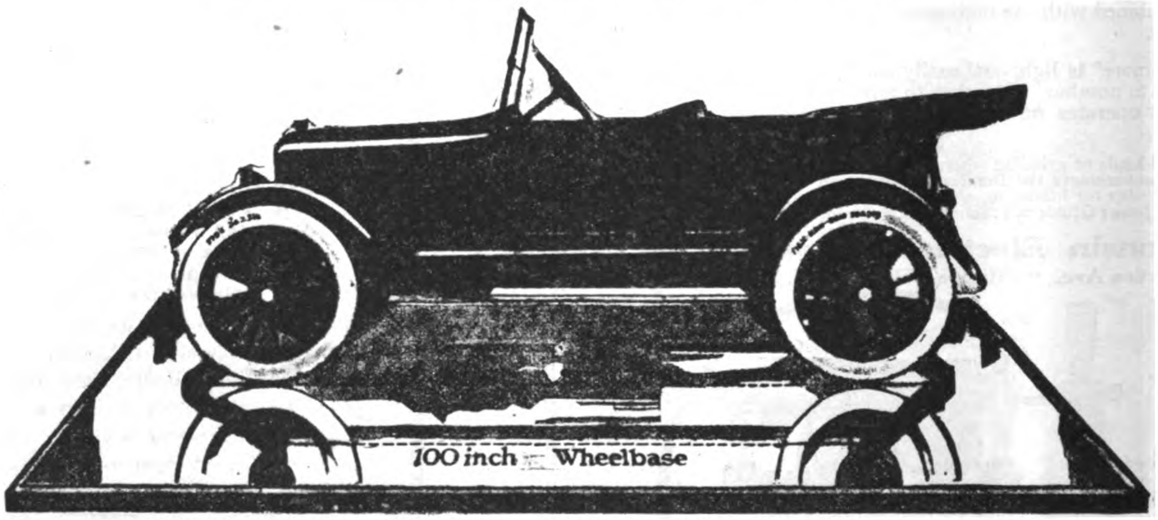
The car and passengers ride smoothly as though floating, free from road shocks which the springs ward off. Its light weight makes great economy in petrol and tyres possible and the 250,000 miles (400,000km) testing to which it has been subjected insures its reliability.

Let us demonstrate the *Overland 4* to you.



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We will mail copies promptly on receipt of your order at $3 each plus postage. Postage (extra) is as follows:

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This coupler has the desirable feature of easy accessibility of parts, thus facilitating the making of repairs.

Furnished with various designs of rear end to suit different types of Draft Rigging.

Manufactured exclusively by

THE McCONWAY & TORLEY CO.

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Cable Address—Torley, Pittsburgh

China Agents: Fearon, Daniel & Co., Tientsin, China
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Buy Your Tools Stamped

GTD

WHEN you want tools for cutting threads, ask to see the GTD line. These fine tools give you the benefit of our 47 years' experience in the threading tool industry. The GTD line of tools includes Taps, Dies, Reamers, Screw Plates, Pipe Tools, Machine Tools, Gages. The GTD trademark is always a guarantee of quality.

GTD Plug Tap

Taps are tools for cutting screw-threads in holes so that a screw of the same size can be inserted, and are in every day use for all kinds of purposes.

There are Hand Taps for hand use, Machine, Nut and Tapper Taps for threading nuts in machines, Staybolt Taps for locomotive work, Pipe Taps for steam fitters and plumbers, *and many* other taps for special purposes including our improved GTD "Gun Taps" which is designed for especially accurate machine tapping.

GTD Round Adjustable Dies

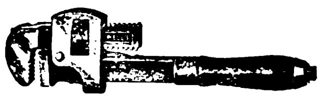
Dies are used for cutting the screws which fit into the screw-threaded holes made by the tap. Like the taps, they are of different designs and are made to suit the work required of them.

The GTD line of Dies consists principally of Round Adjustable Dies, and the *"Little Giant"* and *"OK"* Dies, which are chiefly carried in Screw Plates and the *GTD* "ACORN DIE" which is the most accurate and productive screw-threading die on the market.

GTD Reamers

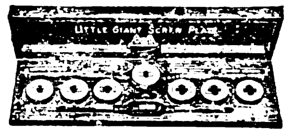
Reamers are used for reaming out or finishing drilled holes of a required size, such as bushings, etc.

The GTD line of Reamers is too comprehensive to list on this page but among these are Hand Reamers, Shell Reamers, Taper Bridge Reamers, Taper Pin Reamers and Repairman's Reamers.



GTD "Wells" Pipe Wrench

The "Wells" Pipe Wrench is an exceptionally fine tool because of its superior finish, drop forged handles and jaws. Recent tests have given us convincing proof that "Wells" Pipe Wrench made by GTD is really the strongest on the market.



GTD Screw Plates

Screw Plates are convenient tool chests for thread-cutting done by hand. They are invaluable for general repair work as the tools are always readily at hand in the box. They contain everything essential to screw-cutting such as taps, die stocks, and tap wrenches. GTD Screw Plates come in many styles. Look for the brand names *Little Giant* and *OK*.

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Every mechanic, foreman, superintendent, or repairman in machine shops where machines are used or repaired should have our No. 40 Pocket size catalog and other booklets which will be sent to any address on receipt of the coupon. Send this coupon addressed to our offices at Greenfield, where your name will be added to our list to receive information as and when issued.

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Please send the catalogs and booklets I have checked here and add our name to your permanent mailing list for other information as issued.

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As successful manufacturers of many of their chief lines; as contracting agents taking the entire output of large manufacturing plants, and as sole distributors of other important lines of international repute, the FAIRBANKS Company has been able to offer a unique service, based on volume production and world-wide distribution.

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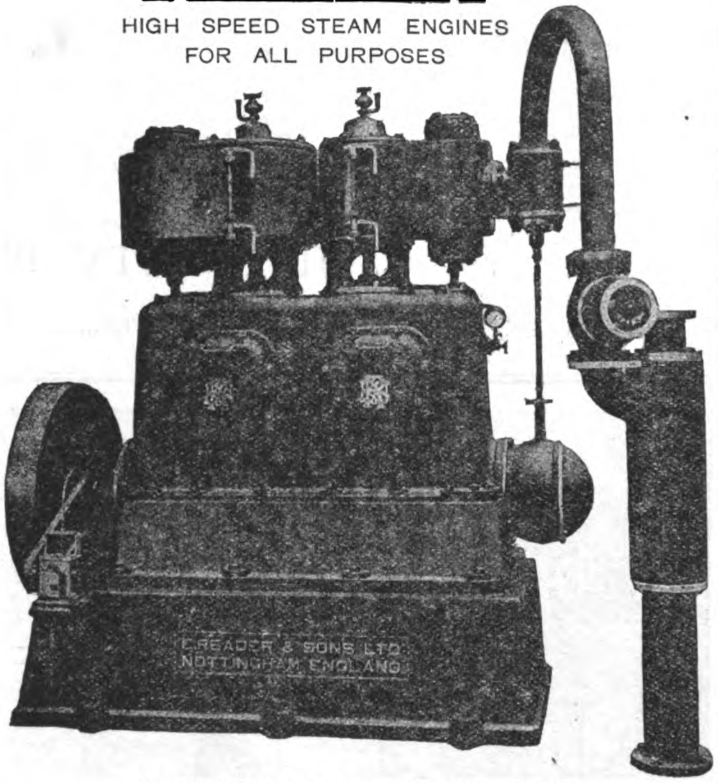

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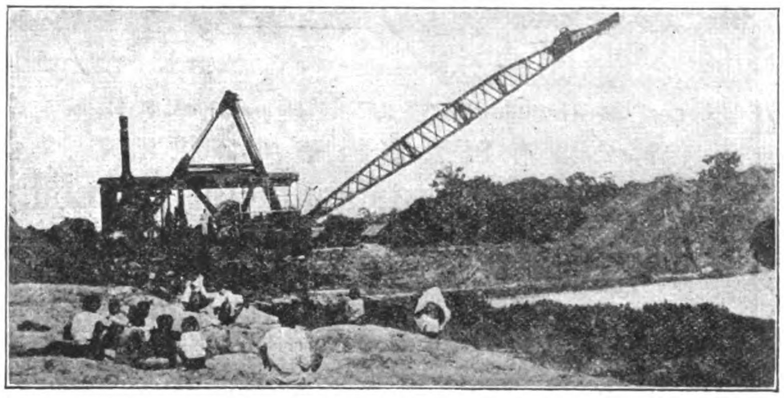

Class 175-B one of the three dragline excavators working on large irrigation system for Siamese Government

Bucyrus dragline excavators are in use for digging, drainage and irrigation canals; stripping overburden from ore deposits, mining, loading sand and gravel in all parts of the world. Among our installations are: Fushun Collieries, Manchuria; Kano Nigeria Tin Areas, Ltd., Africa; Russian Ministry of Agriculture, Turkestan Siberia; DuPont Nitrate Co., Talal, Chile; Chirabad Co., Ltd., Central Asia; Lloyds Ironstone Co., England.

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Interior view showing the four working parts of the double worm gear drive embodied in all models of Rees Jacks.

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Rees Double Worm Gear Drive Jacks are light in weight for their lifting capacity, easily handled and operated, and always dependable. You have no pawls or springs to get out of order, automatically locked at any height in either direction, most efficient jack on the market for the purposes intended.

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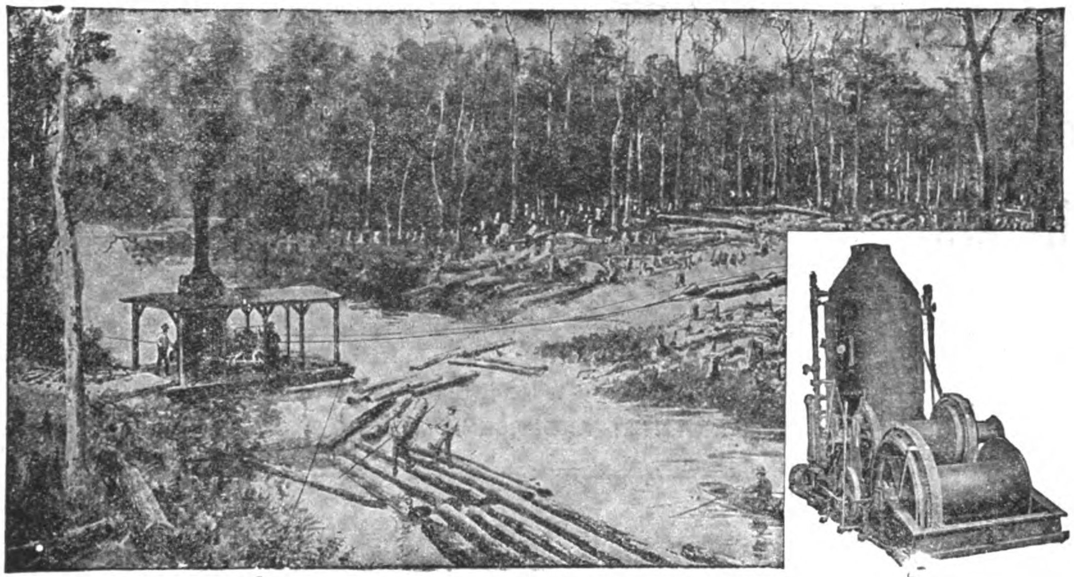
No. 25-A
General purpose Industrial and Car Jack.



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AMERICAN SYSTEM OF

MODERN LOGGING

Costs Less, gives great capacity and a more certain supply of Logs at the Mill. We build Cableways or overhead Skidders and Loaders, also various types of ground skidders. Lidgerwood Logging Machines are used all over the world where logging is done.

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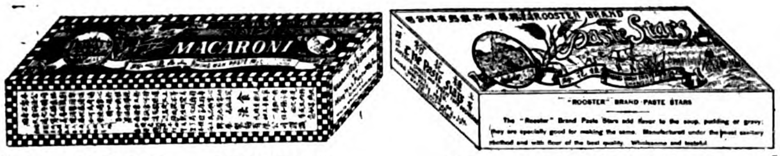

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Macaroni, Paste Stars, Egg Noodles, Vermicelli, and all kinds of Soup Stuffs

All our Pastes bear the "ROOSTER" label and are made with Flour of the Best Quality containing a large percentage of Gluten, and are manufactured under the most sanitary conditions. Having been analyzed by the Government Analyst of Hongkong, our productions have been found to be free from adulterations and from any injurious ingredients.

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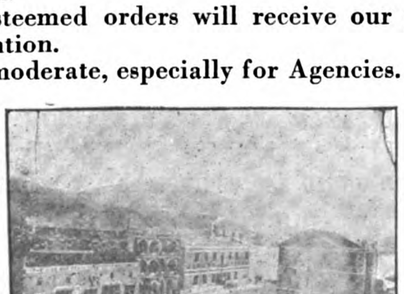

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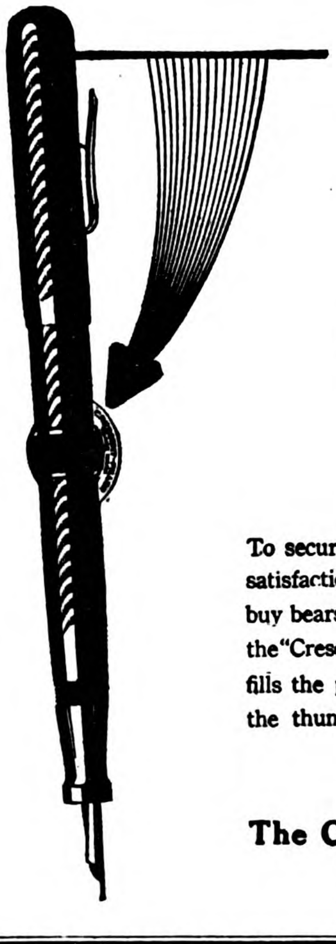

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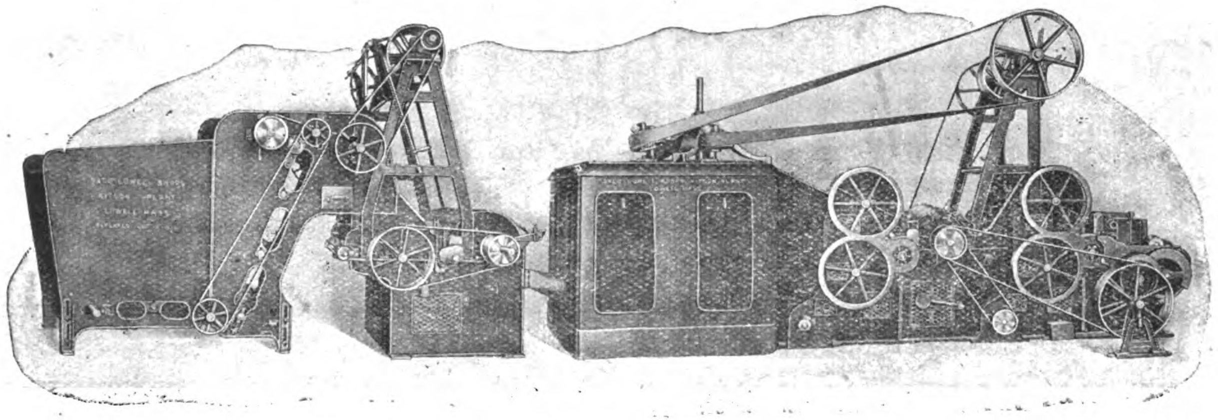

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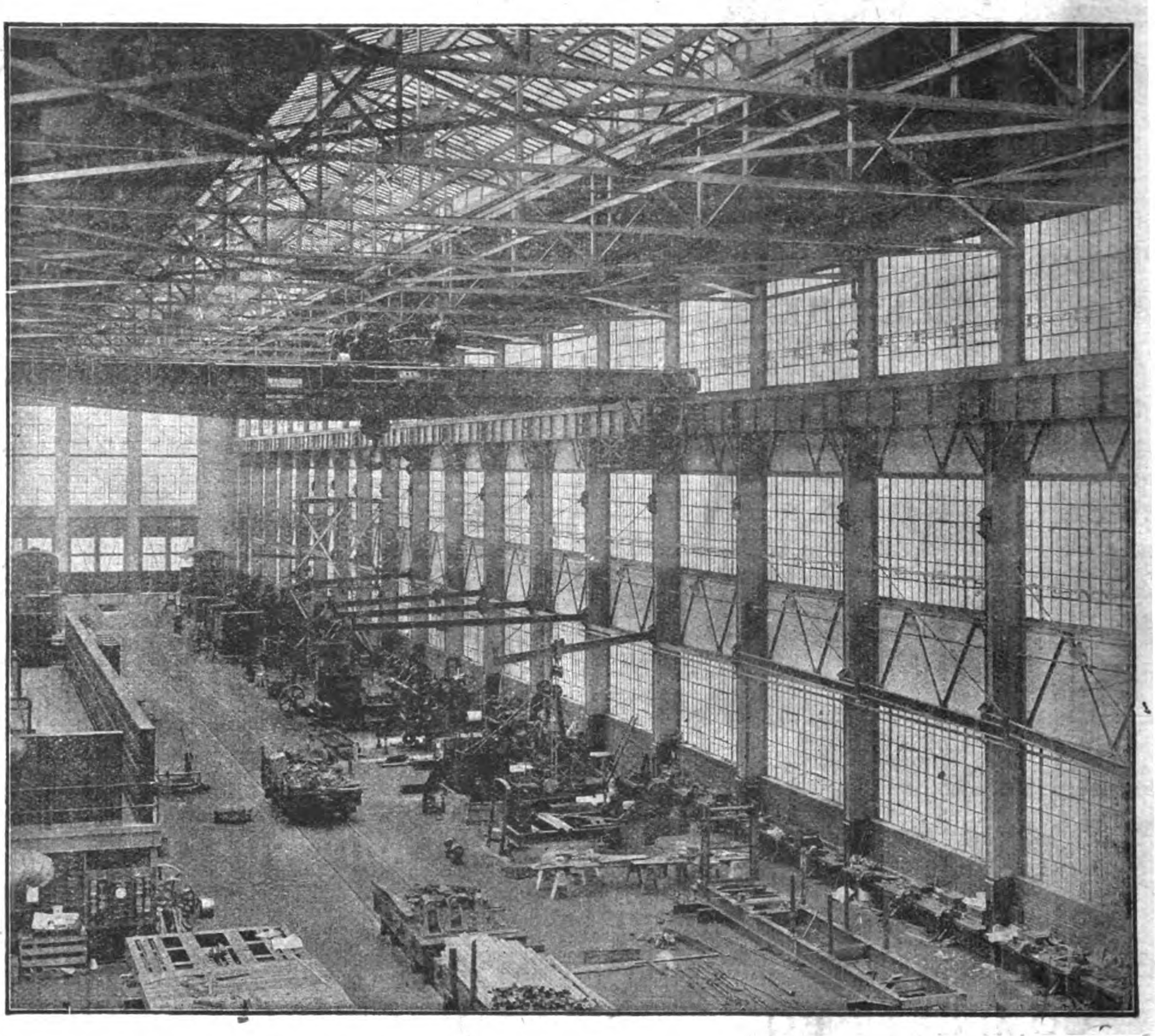

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